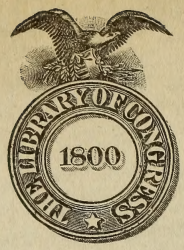

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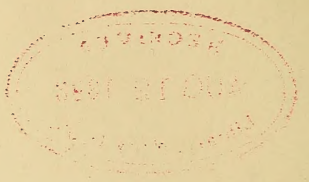

WINTER AND SPRING

ON THE

SHORES OF THE MEDITERRANEAN.

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TORRICELLA DI GRIMALDI

MENTONE

From the East

Vincent Brooks, Day & Son, Lith.

GENOA ROAD

WINTER AND SPRING

ON THE

SHORES OF THE MEDITERRANEAN:

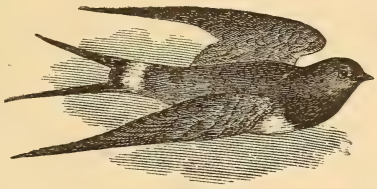
OR,

The Genoese Rivieras, Italy, Spain, Corfu, Greece, the Archipelago, Constantinople, Corsica, Sicily, Sardinia, Malta, Algeria, Tunis, Smyrna, Asia Minor, with Biarritz and Arcachon,

AS WINTER CLIMATES

By JAMES HENRY BENNET, M.D.

MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS, LONDON,
LATE OBSTETRIC PHYSICIAN TO THE ROYAL FREE HOSPITAL, LONDON,
BACHELOR OF ARTS, BACHELOR OF PHYSICAL SCIENCES,
AND DOCTOR OF MEDICINE OF THE SORBONNE, AND OF THE UNIVERSITY, PARIS,
ETC. ETC.



"IENS REDIENSQUE GAUDET."

FIFTH EDITION.

LONDON
J. & A. CHURCHILL, NEW BURLINGTON STREET
1875

[*The right of Translation is reserved.*

D974
.B47
1875

To the Memory

OF THE LATE

JOSEPH LANGSTAFF, Esq.,

FELLOW OF THE ROYAL COLLEGE OF SURGEONS ENGLAND;

PRESIDENT OF THE MEDICAL BOARD, CALCUTTA;

WHO PASSED FORTY YEARS OF HIS LIFE IN INDIA,

THIS WORK

IS DEDICATED BY HIS SINCERELY ATTACHED SON-IN-LAW,

THE AUTHOR.

HIS MOTTO:

"IENS REDIENSQUE GAUDET."

PREFACE.

The present work embodies the experience of fifteen winters and springs passed on the shores of the Mediterranean, from October, 1859, to June, 1874, under the following circumstances:—

Five-and-twenty years devoted to a laborious profession and the harassing cares which pursue a hard-worked London physician, broke down vital powers. In 1859 I became consumptive, and strove in vain to arrest the progress of disease. At last, resigning all professional duties, I wrapped my robes around me and departed southwards, in the autumn of the year 1859, to die in a quiet corner as I and my friends thought, like a wounded denizen of the forest. It was not, however, to be so. The reminiscences of former travel took me to Mentone, on the Genoese Riviera, and under its genial sky, freed from the labours and anxieties of former life, to my very great surprise, I soon began to rally.

The second winter I wished to find a locality even more favoured, one more in the stream of life, present or past, and sought for it in Italy. The search, however, was vain, and the unhygienic state of the large towns of that classical land partly undid the good previously obtained. I retraced my steps, therefore, and again took refuge in quiet, healthy Mentone. The second trial proved even more satisfactory than the first. I gradually attained a very tolerable degree of convalescence, and once more my thoughts instinctively reverted to professional studies and to professional pursuits.

To return altogether to the arena of London practice would have been folly for one just recovering from so fatal a disease. I therefore determined to adopt Mentone as a permanent winter professional residence, merely resuming

London consulting practice during the summer months. Since then I have adhered to this plan, and have spent the winters at Mentone, and the summers in and near London. Between the close of the Riviera winter season, and the resumption of professional duties in London, I take a holiday, in April and May, and have every year employed the leisure in the investigation of the climate and vegetation of other countries on the shores of the Mediterranean. These spring journeys have been conscientiously undertaken with the view to discover a better winter climate than that of the Genoese Riviera, if such exists in the Mediterranean, both for my own advantage and for that of others. They have extended over a period of more than eighteen months.

Hitherto I have not succeeded in finding a better winter climate in the Mediterranean than that of the more sheltered regions of the western Riviera, and the results of my researches may be embodied in a few words. On the shores and islands of the Mediterranean there are two kinds of winter climates:—1st. The mild and dry: viz., the north shores of the Mediterranean in general, and more especially the western Genoese Riviera, and the east coast of Spain. 2nd. The mild and moist: viz., the Ionian Islands, the Grecian Archipelago, Corsica, Sicily, Sardinia, Malta, and also the south coast of the Mediterranean, Algeria, Tunisia, the delta of Lower Egypt, Palestine, and Asia Minor; all in variable degree. I must refer to the book itself for the data on which this statement is founded.

The work first appeared as a mere essay on the winter climate and vegetation of the Mentone amphitheatre, and was published in 1861. It has expanded, in successive editions, until it has become a careful meteorological and botanical study of the vegetation and of the winter and spring climates of the shores and islands of the Mediterranean basin, with the exception of Egypt and Palestine. Not having as yet visited these countries, I have said but little about them, my rule being only to describe localities personally explored. The purely scientific character has been, in some measure, laid aside, and the thoughts, fancies, and travelling impressions of a long period of invalidism have been recorded.

In studying the climate of these various regions of the

Mediterranean sea I have taken as my guides Botany and Horticulture, because they are the surest, the least capable of deceiving. Observations founded on the thermometer and on the registration of winds are very uncertain, and are open to many sources of error. The results obtained by their means may be invalidated by bias on the part of the observer or by his ignorance of meteorology, by imperfect instruments or by a badly-selected locality for observation.

With the vegetable world it is far different, for it cannot deceive, and erroneous conclusions are easily avoided by one who knows its laws. To its component members, temperature is simply a matter of life and death, and the presence or absence of a plant in a locality says more than would pages of thermometrical observations. Plants, moreover, reveal much more than mere temperature, for they are influenced in life, health, and luxuriance by moisture or dryness, by wind or by calm, and by the nature of the soil in which they grow.

At the same time I have avoided entering into minute botanical details, or giving long lists of plants, for my object was not botanical research and exactness; I have wished merely to study climate through vegetation. I have wished to ascertain by the observation of common trees, shrubs and flowers, and of their epoch of producing foliage and flowers, the difference that exists between the winter and spring climate of different regions of the Mediterranean as compared with the north of Europe.

A more minute study of the Mediterranean Flora would, certainly, have rendered this work more valuable in a scientific point of view. I am, however, on the one hand, scarcely prepared for such a study by previous labours in the direction of purely scientific botany, and on the other I might have repelled mere medical and general readers, to whom I more especially address myself, and who, as a rule, are unacquainted with the minutiæ of botanical science.

As, however, my descriptions of natural phenomena were written on the spot, and may be considered careful mental photographs of what actually exists in the regions described, they may prove useful even to scientific readers. Professed

botanists, meteorologists and geologists, may see more in my descriptions than I myself see, with a more limited knowledge of these sciences.

In every region of the Mediterranean examined, both on the north and south shores and on the islands, the ground in any given point is occupied, according to soil, by pretty nearly the same plants in a general sense. In other words, although in any region a botanist might find in a square mile several hundred species, yet the ground is actually occupied by a limited number of species; they are the real inhabitants of the country, and shoulder the rarer species out of the way into holes and corners as it were. Probably this is the case everywhere, and makes the study of vegetation, in a superficial sense, a much easier matter than it is generally supposed to be. Moreover, the Flora of the entire Mediterranean basin is everywhere very similar, indeed all but identical in its main features, for the same soils and under the same conditions of protection and temperature. This will be perceived by my descriptions of vegetation, and must be the explanation and excuse for their sameness.

Although many of the regions described were visited several times in the course of my fifteen years' rambles, I have adhered throughout to the narrative style, preserving the first written descriptions. First impressions have, or ought to have, a freshness about them which constitutes the charm of a book of travels, if charm it has; these first impressions are essentially fugitive, they can never be recalled. We never again see even the loveliest scene in nature with the feelings that were first roused in our minds. I have, however, modified and supplemented "first impressions" whenever necessary, so as to secure correctness.

THE FERNS, WEYBRIDGE, SURREY,
GROSVENOR STREET, LONDON. } Summer.

MENTONE, FRANCE (Winter).

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The Frontispiece is chromolithographed from a water-colour of Mr. E. Binyon, by Messrs. Brooks. The woodcuts are by Messrs. Butterworth and Heath, from sketches and from photographs by M. Davenne and by Mr. W. Rouch. The Algerine wood engravings are principally from photographs by Messrs. Geiser, of Algiers.

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WINTER AND SPRING

ON THE

SHORES OF THE MEDITERRANEAN.

INTRODUCTORY REMARKS.

THE MEDITERRANEAN BASIN AND ITS CLIMATE.

The fifteen winters that I have spent on the Genoese Riviera in study and meditation, the year and a half devoted, in April and May, to the exploration of the Mediterranean shores and islands, have produced their fruits. I have attained a much more comprehensive knowledge of the climate of the Mediterranean generally, as also of its vegetation, than I possessed when the first editions of this work were published. By degrees, as my personal experience of the different regions of the great inland sea has extended, as my knowledge of its vegetation has increased, the laws which regulate and decide the Mediterranean climates have become clearer, more precise. It is my wish and intention in these introductory remarks to state, lucidly and concisely, what these laws are. They will constitute the key to the entire work, and will find their explanation and elucidation in each successive chapter.

Climate may be said to be the result of geographical conditions and of proximity to land or water. Weather depends on seasons and on "which way the wind blows."

Except in the Tropics, winds from the north are cold in winter, cool in summer; whilst winds from the south are mild in winter, hot in summer. Again, both in winter and summer, winds north or south are dry if they come over

GULF OF GENOA (AND THE PROTECTING MOUNTAINS)

Gravé par Erhard, 12, r. Duguay Trouin, Paris.

Kilomètres

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Milles anglais

1 2 4 6 8 10 12 14 16 Milles

Paris. Imp. Monrocq

continents and mountains, moist if they come over water, ocean, sea, or lake.

These data are susceptible of so general an application that a person possessed of a moderate knowledge of meteorology and of physical geography might almost determine the climate of any region of the earth without leaving his study.

The Mediterranean, the earth's "great inland sea," is comprised between latitude 45° and 30° North, and between longitude 5° W. and 36° E. Its width from the Straits of Gibraltar to Syria is 2200 miles. Its breadth at the narrowest part, between Sicily and Africa, is 79 miles; at the broadest part, from the head of the Adriatic to Africa, 1200 miles. (*Vide* Map at end.)

The North shores of the Mediterranean, from Gibraltar to Constantinople, are fringed by mountains, generally abutting on the shores, which constitute the southern extremity of the continent of Europe. The South shores of the Mediterranean are partly occupied by a narrow range of mountains and mountain land (Atlas) and partly by the desert of Sahara, which covers a great portion of the continent of Africa. The great desert begins behind the Atlas range, not more than a hundred miles from the sea, and reaches its shores between Tripoli and Syria. The desert of Sahara is believed to be the hottest region in the world. The islands of the Mediterranean are all mountainous. They may be said to be the summits of submarine mountains and of mountain ranges.

Thus the Mediterranean is a subtropical region by latitude. Physically it is a deep depression or basin, communicating with the ocean, fringed continuously with high mountains on its north shore, bounded by lower mountains and by the greatest and hottest desert of the globe on its southern shore.

From its subtropical position the sun is very powerful, winter and summer, all over the Mediterranean, when not obscured by clouds. From its geographical position, surrounded by land and by continents, cloudy weather is not very frequent, nor is rain very abundant, so that the climate is exceptionally sunny, winter as well as summer. As the

atmosphere also is generally dry, the sky is generally clear and blue, and the rays of the sun have actually more power than in the tropics.

In winter, when the continent of Europe is bound up in frost and covered with snow, when the mountains of Norway and Sweden, the Baltic and Polar regions, are one mass of ice, a north wind, crossing the Mediterranean in a few hours, brings cold weather to the entire inland sea, to its islands, and to its southern shores. Thus in winter it is often cold, and occasionally freezes at Algiers, Tunis, Alexandria, Beyrut. Hoar frost may be seen day after day at sunrise in the desert of Sahara, south of the Atlas (Tristam).

In spring, in April and even in May, a cold north wind may bring cool, even chilly, weather to these southern regions. I have been quite cold, with a north-west wind, at Athens on the 12th of April. This very year (1874), during the first week in May, at Tunis, the nights were cool, below 60° Fah., and the day not above 68° or 70° in a west room.

In winter, on the other hand, a south-west equatorial wind, or a south-east Sahara wind (*scirocco*), lasting several days, will bring mild weather, not only all over the Mediterranean, but all over Europe, up to St. Petersburg.

In spring, in April and May, the same winds, especially the south-east or Sahara wind, may bring intense heat to all parts of the Mediterranean, and what is usually, but irrationally, termed "unseasonable heat" to all parts of the continent of Europe, as far north as St. Petersburg. Such heat and such winds, however, in spring never last more than a few days either in the Mediterranean or in continental Europe, the north winds resuming their sway. Indeed Europe may be said to lie between an ice house, the polar regions, and a furnace, the desert of Sahara.

Thus, in no part of the Mediterranean basin, shores, and islands, is there an immunity from cold and frost in winter from mere latitude; neither is there anywhere—glorious as is the spring—perfect immunity from chilly winds or weather in spring from mere latitude.

Immunity from cold wind in winter and from chilly wind in spring can only be secured, even in the Mediterranean, by the protection of high mountains running east and west.

Mountain ridges and masses which run from east to west intercept north winds, whether these winds are north-east or north-west. Mountain ridges running from north to south, as the Apennines, intercept one of these winds only, the north-east or the north-west, according to the side on which the observer is placed. They do not intercept both, so that the protection they give from north winds is only partial.

The degree of protection given by mountain ridges, whether running east and west or north and south, depends on several conditions—the height of the mountains, their slope, as the more perpendicular they are the greater the protection; the depth and extent of the mountain region; the proximity of the observer to the base of the mountain, for the nearer he is the greater the protection. This latter fact is illustrated by fruit trees in an orchard; those nailed to the sheltering wall are more protected from a north wind blowing over it than those that are planted at some distance from its base.

The maps appended to this work have been specially engraved according to my directions, so as to give the relative elevation and power of the mountains of southern Europe and of the Mediterranean basin. They are intended to afford a panoramic view of the Mediterranean regions as seen from above, and to illustrate the great and important question of protection from north winds.

Notwithstanding all my travels in the Mediterranean, all my researches and investigations into the climate of its various regions, I have hitherto failed to discover a locality more sheltered from cold winds, frost, and rain, than the Genoese Western Riviera, especially the region extending from Ville Franche to St. Remo. Indeed I have not found as yet a region where the vegetation is as southern, or gives evidence of as much shelter, with the exception of the base of the mountains in the vicinity of Malaga or the base of the Dalmatian mountains, in front and north of Corfu.

Thus the prepossessions of the mere tourist which led me to settle as an invalid at Mentone, on the Riviera, in 1859, have been justified by subsequent research and experience. That it should be so will be at once apparent to

any who cast their eye over the map of the Gulf of Genoa at the beginning of the next chapter. It will be seen at once that not only is there in this region marked protection from the north, but also from the north-east and north-west. High, deep mountains form a semicircle round the Gulf of Genoa, such as is not to be found in any other part of the Mediterranean.

The peculiarly mild climate of the coast-line of the Gulf of Genoa, known under the name of Riviera di Levante and Riviera di Ponente, or Eastern and Western Riviera, is indeed much more referable to the protection afforded by mountain ranges than to latitude. The Alps and Apennines form an immense screen to the north-east. The Swiss Alps, which terminate rather abruptly in the plains of Piedmont by the grand Alpine heights of Mont Cenis, Mont St. Bernard, Mont Simplon, are continued in Savoy and Dauphiny down to the Mediterranean at Toulon, Hyères, Cannes, and Nice. From Nice the mountain range, which then takes the name of Maritime Alps, skirts the shore of the Gulf of Genoa in a north-easterly direction as far as that city, and in a south-easterly direction as far as Lucca. At Genoa it unites with the Apennines, or rather becomes the Apennines. At Lucca, leaving the coast, the Apennines occupy Central Italy, forming a kind of backbone, as far south as Reggio.

Owing to this latter geographical fact Italy is less sheltered than the coast of the Gulf of Genoa, and the health climates of Italy are limited to its western shores. The Apennines separate Italy into two longitudinal sections, from Genoa to the straits of Messina, and as these mountains rise from four to nine thousand feet in height, they constitute a barrier which protects the entire western coast-line from the north-east winds of central and northern Europe. Thence a totally different winter climate throughout the Italian peninsula, on the east and west of the Apennine ridge. On the eastern, or Adriatic side, in the plains of Piedmont, Umbria, and the Marches, owing to the predominance of the cold winds from the centre and east of Europe, the winter and spring are very cold, much colder than on the western or Mediterranean side, the one on which we find

the Italian pleasure cities, Pisa, Florence, Rome, Naples. The western coast of Italy is not only protected from the north-east winds, which are the coldest in winter in Europe, but it is open to the warm south-west winds, which very often blow from the Mediterranean during autumn and spring, and bring with them warm sea-currents. At the same time, it is entirely open to the north-west winds, which in winter are often very keen. The Western Riviera, on the contrary, is also sheltered from these north-west winds.

Protection from the north-winds, and exposure to the south-winds, however, gives to the entire region from Toulon to Pisa, a mildness of winter climate which latitude alone would not impart, differing in degree according to locality. Thus Mentone and Monaco, two of the most sheltered and warmest spots on the north coast of the Mediterranean, are situated only in latitude 43° 45′, between thirty and forty miles more to the north than Toulon (43° 7′) or Marseilles (43° 17′); but the latter are, the one less protected, the other unprotected, northwards, by mountain ranges, and consequently at Marseilles very sharp frosts take place every winter. Nor is this surprising when we consider that in the north and centre of Europe the ground is often covered with snow for many months during winter, and that a high wind travels at the rate of from thirty to forty miles an hour. The distance, say from the highest Swiss mountain, as represented by Mont Blanc, to the Mediterranean is not more than a hundred and sixty miles. A strong north wind will not only reach the coast-line in a few hours, where unimpeded by mountains, bringing with it cold weather to all unprotected regions, but it will cross the Mediterranean and bring cold rains, and even frost, to Algeria, and to the north of Africa.

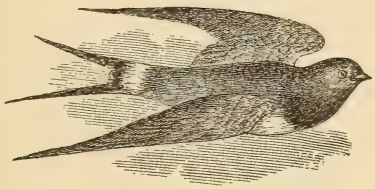
During the winter the most protected and warmest part of this south-eastern coast of France and western coast of Italy, the undercliff of central Europe, is unquestionably the Riviera di Ponente, or Western Riviera, extending from Nice to Genoa. The exceptionally mild winter climate of this region is principally to be attributed to the great height of the mountain range skirting the shore, and to its extreme proximity to the sea. As one of its names implies, Cornice,

the Riviera is a mere ledge or coast-line at the foot of the mountains, which protect it north-west and north-east.

My knowledge of the winter climate and of the vegetation of the Mediterranean is principally derived from my fifteen winters' residence at Mentone, on the Western Riviera; but my spring travels have shown me that the general physical, geological, meteorological, and botanical conditions of the Mediterranean shores and islands are so far identical that the facts observed in one region apply to all, with such modifications as the greater or less amount of shelter and the nature of the soil imply.

I purpose, therefore, in the first part of this work to describe the north shore of the Mediterranean, taking as an illustration its most sheltered region, the Western Riviera. With this intention I shall more especially study the climate, geology, and vegetation of the Mentone amphitheatre, adding a general account of the Mediterranean Sea. In the second part I shall describe the large islands of the Mediterranean; and in the third part its south shore.

The opening of the railway from Paris to Nice and Genoa has rendered the lovely Riviera very easy of access, even to confirmed invalids, and I believe that the time is fast approaching when tens of thousands from the north of Europe will adopt the habits of the swallow, and transform every town and village on its coast into sunny winter retreats. I may remark that it is the first point of the Mediterranean shore where birds of passage from the north make a halt for the winter.



OUTWARD BOUND.

PART I.

THE NORTH SHORE OF THE MEDITERRANEAN.

THE WESTERN RIVIERA AND MENTONE.

CHAPTER I.

MENTONE—SITUATION—CLIMATE AS SHOWN BY VEGETATION.

"Indi i monti Ligustici e Riviera
Che cor aranci e sempre verdi mirti,
Quasi avendo perpetua primavera
Sparge per l'aria, bene olenti spirti."
ARIOSTO, Canto primo, lxxii.

THERE are few old Italian travellers to whose mind the word "Riviera" does not recall the recollection of happy days of leisurely vetturino progress, along a sunny, picturesque shore, overshadowed by bold mountains, and inhabited by fishermen who, on a fine autumnal evening, often seem to realize the scene of the market chorus in "Masaniello." When, overtaken by ill health, I was obliged to abandon the hard work of active life, it was a consolation to me to know that I could migrate to this sun-favoured coast, and conscientiously spend the dreary winter, in legitimate idleness, on a shore which memory painted in glowing colours. In this instance the memories of the past were fully verified by the realities of actual experience; and now that rest and mild southern winters have restored me, in a measure, to health, I am desirous to make known the Riviera and Mentone to the tribe of sufferers obliged to fly in winter from the British Isles; for our beloved country is "merrie," in winter, only for the hale and strong, who can defy and enjoy the cutting winds, the rain, the snow, and the frost of a northern land.

Along the entire Riviera there is no more picturesque spot than the one in which Mentone lies, encircled by its amphi-

theatre of mountains; my selection of a winter home was thus a fortunate one.

Mentone is a small Italian town of five thousand inhabitants, situated in latitude 43° 45′, nineteen miles east of Nice, at the foot of the Maritime Alps. It is the first station out of Nice, on the Cornice road to Genoa, and was the largest town of the principality of Monaco before its annexation to France, along with Nice.

The Gulf of Genoa is formed between Nice and Lucca, by the Maritime Alps and the Apennines, the immense masses of which descend to the sea so abruptly in some places as to leave no shore, their beetling crags terminating directly in the sea. This is the case immediately behind and to the eastward of Nice. Owing to this circumstance, there was formerly no continuous carriage road from Nice to Genoa. The land communication between these cities was carried on by means of a very picturesque, but very unsafe mule track, along the rocky coast. The carriage road that now exists was commenced by Napoleon at the beginning of the century, as a military road, all but indispensable when Italy was annexed to the French Republic. He left it in an unfinished state, but it has since then been completed by successive Governments. Until within the last few years this road was very unsafe after heavy rains, owing to the absence of bridges over some of the torrent rivers, and to frequent landslips. After the tropical rains to which the Riviera is exposed and which descend from the mountains that fringe its shores, these rivers roll immense masses of water to the sea, and thus either become impassable for a time, or are crossed with difficulty, and even danger. In days still quite recent, every winter, carriages were overturned and carried towards the sea, and sometimes travellers drowned, but such catastrophes have now ceased to occur, most of the rivers being crossed by good bridges.

The road has been carried in many places over and along high mountains and precipitous cliffs. Where the shore exists, it is generally a mere rocky, shingly, or sandy ledge or beach, from which the mountains rise directly. In some points, however, where rivers reach the sea, there

are small plains at the foot of the mountains, as at Andora.

On leaving Nice for Genoa, the road at once begins to ascend the Turbia, a shoulder of the Aggel. This mountain is about 3000 feet high, and is one of the spurs that run directly into the sea. The fair city of Nice lies at its western base. The ascent occupies two hours, the road reaching an elevation of 2100 feet, two miles before arriving at the village of Turbia. The descent occupies an hour and a half, and at its termination is situated Mentone. As the traveller ascends the Turbia from Nice, he obtains a very beautiful panoramic view of the town, and of the mountain-circled plain in which it lies. The eye rests with interest and pleasure on the eminence that commands Nice, crowned in former days by the old fortress, near the outlet to the valley of the Paillon river which pierces the background of huge mountains to the north-east, and on the beautiful coast-line, as far as the distant Esterel range. It is a very lovely view, especially in the afternoon, when the sun, passing to the south-west, casts its radiance over the scene. Indeed, I should advise travellers Mentone bound, not pressed for time, or over-burdened with travelling "impedimenta," to abandon the railway at Nice, and to drive to Mentone, hiring a private carriage for the purpose. There is not a more beautiful drive in Europe, and by rail it is entirely lost. The start from Nice should be made about twelve o'clock, so as to have the south-western sun to illumine the road all the way. First impressions are of great importance, and the drive from Nice to Mentone is so picturesque that it should always be taken by health tourists, and especially by future sojourners at Mentone, provided the weather be fine.

The railway, now open from Nice to Mentone, on the Italian frontier, much facilitates this stage of the journey, to those who wish to travel rapidly. Moreover, skirting the foot of the mountains, passing across lovely bays, through many short tunnels, it gives glimpses of much picturesque coast scenery. Still, the traveller who adopts it loses many beautiful mountain views, of a character

totally different from what is seen in mountain regions in the north of Europe.

When the village of Turbia has been reached, and the descent begins, a panorama even more glorious presents itself to the eye. At our feet lies Monaco, crowning a promontory that advances into the sea and forms a small port. As the road descends, winding along the mountain side, a brown sun-burnt village is seen—Roccabruna, clinging to the rocks. Then a corner is turned, and behold a magnificent mountain amphitheatre appears, that of Mentone. The higher mountains, receding round a beautiful bay opening to the south-east, form this amphitheatre, the centre of which is about two miles from the sea-shore.

The coast outline, which is about four miles in circuit, is divided into two unequal bays, the east and the west, by a hilly spur or buttress gradually sloping from one of the higher mountains to the sea, and on the sides of which climb the houses that constitute the old town of Mentone. The space between the sea and the mountains forming the amphitheatre, mountains between 3000 and 4000 feet high, is occupied by a series of hills which rest on the flanks of the higher range. They slope gently to the shore, and are rent by numerous ravines and torrential valleys. The higher mountains, of a greyish-white oolitic limestone, are generally precipitous and bare, with the exception of a few groves of maritime firs. Most of the lower hills, which rise to a height of from 500 to 1500 feet, are densely covered with olive-trees, and present at a distance the aspect of tree-covered, rounded ridges, gently descending to the sea.

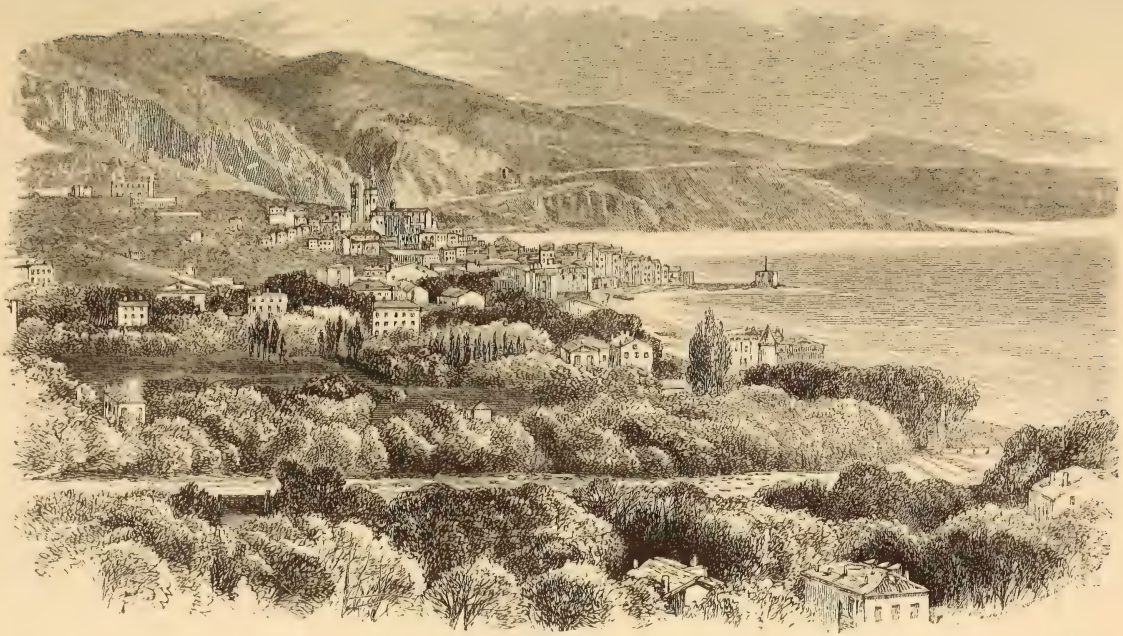
The entire bay and the town of Mentone, with the background of swelling olive-clad hills, closed in by the amphitheatre of mountains, are thus thoroughly protected from the north-west, north, and north-east winds. The position of the town, with reference to the bays, will be best understood by referring to the frontispiece, which is taken from some projecting rocks at the eastern extremity of the eastern bay.

To thoroughly understand and appreciate the district,

and its singularly protected character, a boat should be taken and the panorama viewed a mile or two from the shore. The extreme beauty of the coast will amply repay the trouble. Thus seen, all the details are blended into one harmonious whole; the two bays becoming one, and the little town scarcely dividing them. The grandeur of the semicircular range of mountains, generally steeped in glorious sunshine, also comes out in broad outline. These mountains positively appear to partly encircle the Mentonian amphitheatre in their arms, to separate it and its inhabitants from the world at large, and to present them to the blue Mediterranean waves, and to the warm southern sunshine.

Behind the mountains which form the background of the Mentonian ridges and valleys, are still higher mountains rising in successive ranges to an altitude of from 5000 to 9000 feet. The higher ranges constitute the main chain of the Maritime Alps. They extend from east to north-west far inland, until they mingle with the high Alps of Savoy and Dauphiny. The presence of this second and higher mountain range greatly increases the protection afforded to the coast-line by the lower one, and partly explains its exceptional immunity from the winter cold of continental Europe.

Thus, the Mentone amphitheatre, being only open to the south south-east and south-west, the mistral, as a north-west wind, is not at all felt, and but slightly as a deflected south-west wind. All the northerly winds pass over the higher mountains and fall into the sea at some distance—several miles from the shore. When they reign, there is a calm not only in the bay at Mentone, but for some distance from the shore; whilst at a few miles distance the sea may be crested, white and furious. This is constantly observed on ascending high ground. Owing to the Mentonian bay opening to the south-east, the south-east (the *scirocco*), the direct south and the south-west winds, blow directly into the bay, and when strong occasion a heavy, rolling swell. These southerly winds, to which alone Mentone is directly exposed, are never cold. When, however, hurricanes reign in continental Europe from the



MENTONE (FROM THE WEST).

north-west or north-east, the wind sometimes turns round the protecting mountains west and east, and is really felt on the shore line, much to the surprise of those who have been told that north winds cannot by any possibility reach this favoured region.

Climate as shown by Vegetation.

Owing to the complete protection the mountains afford to Mentone from the west, north-west, north, and north-east winds, owing to its southern exposure, and to the reflection of the sun's rays from the sides of the naked limestone mountains which form the amphitheatre, its winter climate is warmer than that of Nice, its neighbour; indeed, it is warmer than that of any part of the northern or central regions of Italy. That such is the case is shown by the vegetation. The latitude of Palermo, five degrees further south, must be reached, to find the same vegetation as at Mentone—groves of lemon-trees growing in the open air, like apple-trees in an English orchard. Even at Palermo, which looks to the north, the lemon orchards are protected by walls, or the trees are planted in ravines, as I have found to be the case in the warmest regions of the Mediterranean, wherever the lemon grows and thrives.

The peculiar mildness of the winter may also be partly accounted for on geothermal (earth heat) grounds. It is well known that even in England the warmth imparted to the surface of the ground by summer heat is not exhausted by radiation until the winter be far advanced. Thus, at three feet from the surface it is only at the end of January that the soil has cooled to its lowest point; that is, has exhausted by radiation the heat accumulated during summer. How much greater must be the winter radiation of summer-accumulated heat in a locality like Mentone, surrounded by an amphitheatre of limestone rocks, which become heated to an extreme extent during the long summer days, under the rays of an all but tropical sun, and in a cloudless sky! The importance of this element, in the consideration of climate, will be better appreciated when we know that it takes several months for a thermometer to cool down after the glass tube has been closed by

momentary exposure to the flame of the blowpipe.* It is only after that lapse of time that the glass has regained a normal state, and that it can be graduated, when scientific precision is in view. So retentive of heat are most solid bodies, and so long a period of time does it take for them to lose by radiation heat once acquired.

The exceptional warmth of the winter climate of Mentone, even for the Riviera, is proved, beyond all question or doubt, by the presence of groves of large, healthy Lemon-trees, which ripen their fruit every year in the fullest perfection, in nearly all the ravines and on the warmer hill-sides, wherever water can be obtained. Constant irrigation, summer and winter, is necessary for their cultivation, as well as great summer heat and a mild winter temperature. The Lemon-trees are, indeed, much more numerous than the Orange-trees, although many fine plantations of the latter are found throughout the district. The presence, however, of Orange and Lemon-trees growing in healthy luxuriance, as forest trees, in the open air, does not prove that we have reached a tropical climate, where cold is unknown. When the weather is dry, and the sky is covered with clouds, which arrest terrestrial radiation, the fruit of the Orange-tree will bear 7° Fah. below the freezing point, without injury, and Orange-trees themselves are only killed by 11 degrees of frost. The Lemon fruit, under similar circumstances, can only bear 5° without injury, and the trees are killed by 8° or 9°. But if the cold weather sets in after a thaw, or after rain, if the atmosphere is loaded with moisture, or if the sky is cloudless, and the radiation from the earth is thus rapid at night, either the fruit or the trees may perish at a much higher temperature. The inhabitants of southern districts seem to think that a less amount of frost is fatal to Lemon and Orange-trees; but my own experience during many winters corroborates the above data, taken from Roubaudi's work on Nice—a very scientific book.

On one side of the eastern bay, near the Pont St. Louis, the warmest and most sheltered region of Mentone, the

* Drew's Practical Meteorology, p. 42.

side of the mountain is partially covered with Lemon-trees, which ascend on terraces to a considerable height above the sea. They are in flower, and perfume the air at all seasons. In these "warm terraces," protected from all winds but the south, exposed to the sun from morning to night, winter may be said not to exist. Throughout its entire duration insect life is abundant. The lively lizard never hybernates, but daily basks and sports in the sun, and the brilliant dragon-fly may be seen darting about in mid-winter. The spider spins his web, finding abundant food, and the swallows or rather the martins never migrate; they are constantly seen circling among the rocks. The Harebell, the red Valerian, Violets, and our own pretty Veronica, flower in December and January in this favoured spot long before they appear elsewhere.

The lemons produced at Mentone are known throughout Northern Europe and America, and fetch a high price. The Lemon-tree flowers here all the year through, never resting—a fact which implies constant and active vegetation, without any period of repose. The crop is gathered at four different epochs, the trees bearing at the same time flowers and fruits of all sizes. The existence of large Lemon-trees in groves, from twenty to thirty, or more, years old, without artificial protection, and their profitable cultivation throughout the year, prove that where they grow there must have been freedom from severe frost for many years. I was informed, however, that about thirty years ago nearly all the Lemon-trees in the country were destroyed in one night, which may account for no very old trees being seen.

During the fifteen winters that I have passed at Mentone I have found a great difference in the degree and the severity of the cold from year to year. In the more severe winters, with a northerly wind, I have repeatedly known the thermometer to descend below zero several nights consecutively, near the sea-shore, and at the outlet of the torrent beds, especially in the western bay. Slight films of ice then form on shallow pools on the road and near the torrents, especially in the western bay, which is more exposed to down-draughts from the mountains; and the higher mountain range may

be covered with snow to the level of the olive groves. This untoward state of things generally occasions great dismay in the minds of the inhabitants, whose principal riches are the lemon groves. I have known many sit up for several nights, in the greatest consternation, watching the thermometer. Indeed, there is in these cases quite a panic with reference to the lamentable condition of the weather. Such feelings and fears plainly indicate that frost and snow are unusual and unwelcome visitors. Snow often, however, lies for several days on the higher mountains, thereby giving them a most picturesque, Swiss-like appearance.

On very exceptional occasions snow may even fall on the shore level, melting as it falls. In January, 1864, there was a frost of unusual intensity throughout the south of Europe, in Italy and Spain especially. At Mentone it froze on the sea-level several nights consecutively, both in the eastern and western bays, and snow fell on the shore-level. For several days it lay in northern and shaded situations, although a bright sun was shining. Many Lemon trees were killed, and much fruit destroyed; but the trees that were killed were all at the outlet of valleys running up to the mountains, where they had been planted, I was told, in opposition to previous experience. Every twenty or thirty years an exceptionally intense frost occurs, and kills the Lemon trees in all but really warm and sheltered positions. The culture of the lemon being very remunerative, the agriculturist is apt to despise these warnings, and to endeavour to extend its range. All goes well for a time, and then the exceptional frost year occurs, destroys the trees imprudently planted, and marks the limit of cultivation.

It is the same in England. Every now and then a very severe winter occurs, and kills many of the shrubs and trees imported from all parts of the world, and apparently well established in our country. It requires half a century to prove the thorough adaptability of a foreign shrub or tree to a new climate. With us such trees as the Oak, the Elm, the Hawthorn, the Chestnut, are either native or really acclimatized trees. They do not so readily admit of an addition to their number as might at first be imagined.

Thus the severe winter of 1860–1 witnessed the destruction of many apparently established favourites.

On no other part of the Cornice road do Lemon-trees grow as freely as at Mentone. At Cannes they are all but unheard of, and at Nice they only grow in sheltered and protected sites, and not luxuriantly. As I have stated, the latitude of Sicily, five degrees further south, must be reached to find them growing with equal luxuriance, and even there they are generally protected by walls, and refuse to grow wherever there is a down-draught from neighbouring mountains.

The Orange-tree flowers but once in the year, and bears one crop of fruit only. It is a more hardy tree, as this botanical fact implies, and can bear without injury, as we have seen, several degrees of frost. Still, as the fruit matures in autumn and winter, it does not attain excellence in regions where the winter is cold. There are many fine groves of Orange-trees at Mentone, especially the one at the base of the Cap Martin. They are, however, always in situations sheltered from wind, which they, apparently, cannot bear as well as Lemon-trees. Although the trees are large, and the fruit ripens well, the oranges are scarcely equal to those we get from the Azores, from the Balearic Isles, or from Malta. This deficiency, however, appears to be owing more to the selection of inferior varieties than to defective climate. Some trees in private gardens, and others growing near Monaco, only a few miles distant, and in a locality presenting the same climate condition, are as good as any in Europe if allowed to remain on the tree until really ripe.

To bring out the real sweetness of the orange it should be allowed to remain on the tree all summer. It is insipid during the hot months, but after the autumn rains fills with luscious juice. This is seldom or never done, however, where oranges are cultivated for profit.

There are many varieties of the Orange, some of which are much sweeter and ripen earlier than others, as, for instance, the Maltese and Majorca orange, but then they are mostly thin-skinned, and do not keep as well as the thick-skinned or Portugal variety. The latter are, there-

fore, preferred as the best for exportation. Oranges intended for exportation are gathered in January and February, before they are ripe, as otherwise they would not bear the packing and transport. They do not really become ripe and sweet on the tree before April, or even May—long after they redden. Those exposed for sale at Mentone are a part of the oranges picked under these conditions. The only way, therefore, to have really good oranges is to purchase the crop of one or more trees, to leave the oranges on the tree until they are quite sweet and ripe, which is not until April, or even May, and to pick them as wanted.

The crop of an orange grove or orchard is generally sold on the tree, to speculators from Paris, for a given sum. The latter undertake the picking and packing, and in January and February the town and country are quite alive with their operations. Troops of girls and women may be seen daily coming down from the mountains with large baskets of oranges or lemons poised on their heads. They carry as much as a hundred-weight, or more, at a time, with apparent ease. They are generally barefooted, to enable them to get a better grasp of the rocky paths, and look very picturesque. Only the strongest and healthiest girls can undertake this work, and that but for a few years. They go to and from the mountains, a distance of from two to four miles, several times a day, and earn about fifteen pence.

Throughout the winter the orange groves, covered with their golden fruit, form a charming feature in the landscape, reminding the looker-on of the garden of the Hesperides of olden times. From the regularity of its growth, the abundance and golden hue of its fruit, the orange-tree is a much more picturesque object than the lemon-tree. The fruit of the latter is always either green or a pale yellow, and the habit of the tree, young or old, is rather straggling. Both lemon and orange-trees, whenever they emerge from the valleys, on the hill-side, contrast vividly, by their bright green tinge, with the sombre hue of the olive-trees.

The Olive-tree is the real lord of the Mentonian amphitheatre, covering the lower hills and the base of the higher ones to a height of about two thousand feet above the level of the sea. In the south of France the olive-tree,

however fertile, is a miserable object. It is generally treated as a pollard, is small and dwarfish, and looks much like a mutilated dust-covered willow. As soon, however, as the Esterel mountains are passed, and Cannes is reached, we enter on a different climate, more protected in winter, and more suited to its growth. It is allowed to grow as a forest tree, and at once assumes a dignity and grandeur which quite surprises those who have only seen the stunted

THE LEMON GIRL.

specimens of "la belle Provence." The Olive-tree is only destroyed by a frost of fifteen or sixteen degrees Fah., so that it is not injured or killed on the Riviera by exceptional winters, as are the delicate Lemon-trees. But the young shoots and the fruit are frozen and irremediably injured when the thermometer falls six or seven degrees below the freezing point. No frost, however, to which this region is exposed, even once in a century, can injure the tree, so that it goes on growing indefinitely, and attains its natural

period of longevity, as do with us the trees that are natives of our country, the Birch, the Beech, the Scotch Fir, and the Oak. Like them, it resists the terrible cold of exceptional years, such as the years 1860–61, and reappears in spring, hale and vigorous, when whole armies of apparently naturalized foreigners have succumbed.

The longevity of the Olive-tree, in a congenial climate like that of Mentone, may indeed be said to be indefinite. There are Olive-trees still alive at Monaco, at the Cap Martin, and elsewhere, which are supposed to be coeval with the Roman empire. It is a slow-growing tree, and forms cartloads of hard roots, which fill and cover the ground where it stands. When, after several hundred years, the trunk decays, the bark remains alive. As the decay progresses, the tree splits, as it were, into two, three, or more sections. The bark twists and curls round each of these decayed sections, and unites on the other side. Then, instead of the old tree, we have, in its place, two, three, or more, apparently separate, although in reality all growing from the same root. When these in turn die, new shoots spring up from the old roots, and thus the life of the tree is indefinitely prolonged. The old Olive-groves are, from this cause, indescribably singular and interesting, presenting on every side evidences of hoary old age. All the stages of growth above described may be witnessed within the space of a few yards; and the partially decayed, partially split, gnarled, twisted, curved trunks are picturesque in the extreme.

The healthy full-grown Olive-tree is really very beautiful. It is often as large as a fine old oak, but with fewer limbs and a more sparse foliage. In the variety of the Olive-tree generally cultivated on the Riviera the terminal extremity of the branches hangs down, so as to give it the characteristic appearance of a weeping ash or willow. The "weeping" character of the tree is, however, much less marked than in those just mentioned, owing to the more scanty foliage, and to the extremities of the smaller branches only drooping. To some who are sad, to mourners, the dense masses of these sombre grey-coloured trees, with hanging foliage, give a sorrowful, mournful character to

AN OLD OLIVE-TREE.

the landscape. But it is only those who have sadness in their hearts, a sadness which reflects on nature, who view the Olive-tree in this light. To others, the play of the wind on the ever-moving pendulous masses of foliage, and that of the sun and light on the dark green leaves, especially when seen in masses from a height above, is both beautiful and soothing.

I never fully appreciated the beauty of the Olive-tree, although I had seen it in its glory in southern Italy, until I had passed a winter under the shadow of an Olive-clad mountain at Mentone. The fact is that the Olive-tree, like our own evergreen Spruce and Scotch Fir, is much more beautiful in autumn and winter than in summer. At the latter period of the year most of the leaves are old, and have become browned by the summer heat and by at least a year's existence, so that the entire tree often assumes a faded, dingy hue. In early summer, too, the yellow hue of the pollen of the male flowers of Conifers gives a yellowish tinge to the entire tree, owing to their extreme abundance. In spring the new leaves of the evergreen tree form, in summer and autumn the old ones are in a great measure cast off, and when winter comes, it is in all its glory. It has thrown off its worn-out damaged garments, and is again clothed in the grace and beauty of early youth.

Thus, instead of the brown, dust-coloured foliage which the pleasure traveller sees in his autumn journey, the winter invalid sees leaves, sombre it is true, but fresh and beautiful to look at, either from near or from afar. The scantiness of the Olive-tree foliage in winter, also, is an advantage. It lets the sun filter pleasantly through, breaking its power without concealing it, and rendering a walk or a lounge in "the Olive-groves," even in the hot midday sun, most enjoyable. Many and many an afternoon have I spent at Mentone, in December and January, sitting with a book under the shade of an old Olive-tree.

The predominance of these Olive-growers gives a very peculiar character to the Mentonian amphitheatre and to the Riviera in general—a Scriptural character, if I may so

term it. The Olive-tree, which is a native of Asia Minor, or of Palestine, is the tree of the Holy Land, and is constantly mentioned in Scripture. Thus its presence, as the principal feature of the surrounding vegetation, imparts an Eastern charm to the place, taking the mind to the Mount of Olives, to Jerusalem, and to the sacred scenes of Holy Writ. We feel that it was in such a land that the events we have read of from our childhood upwards with reverence and interest, took place. We feel that we are nearer to these scenes than in our own northern island, and we really understand what it is "to sit under the Fig-tree," and to walk "in the Olive-grove."

The branches of the Olive-tree are not numerous. They spring from the trunk, near the ground; or rather, the trunk generally divides into two or three branches. The latter extend, at an acute angle, a long distance from the tree. Their foliage being terminal, and the wood non-elastic, they are not adapted to bear a heavy burden, for it acts as a weight at the extremity of a long lever. Thus, when snow fell thickly in the rigorous winter of 1864–5, without melting—an unheard of event—large olive branches broke off by hundreds, and great loss was thereby entailed on the country.

In northern regions the Pines, the Firs, indeed Conifers in general, have their branches arranged in successive stages, or whorls, which extend only a short distance from the trunk of the tree. These branches, also, either droop downwards by natural conformation, so as to throw off the snow which falls on them, or bend downwards, so as to shake it off. The resin which fills the wood of the tree gives the necessary elasticity, and enables it thus to bend and throw off the snow, when the poor Olive-tree resists the unnatural load and breaks.

The Olive-tree flowers in April, and bears every year. But a year of abundance is generally followed by one, or even two, of comparative sterility. It has to be well manured every second or third year, in order to secure its fruitfulness. For this purpose the favourite manure is old woollen and linen rags, which are imported from Italy in boat-loads; and such rags! I verily believe that even our

paper manufacturers would scorn them. A trench is dug round the trunk of the tree, at some little distance—about two feet deep, and three feet wide. In this trench the rags are placed; they are then soaked with liquid manure, and covered up with the earth—a process which no doubt destroys a vast amount of life. Although done by mere routine, this system of "arboriculture" is chemically judicious. Wool contains nitrogen like all other animal substances, so that woollen rags must be and are valuable as manure.

The olive-berry ripens in the autumn; it becomes black, and begins to fall off the tree in December and January. Some of the trees are at once cleared by beating the branches with long canes. In that case the oil is not so abundant, but is of better quality. In other cases the berries are left on the trees for two or three months longer; until indeed they nearly all fall off. The oil made from these berries is more abundant, but not so good. The olives are smaller than those which we eat pickled; the latter belong to another species of the Olive-tree, which is principally cultivated in Spain.

Picking the olive berries from the ground underneath the trees is quite an occupation with old or infirm women, and with young girls. They earn about twenty sous (10*d.*) a day, and their labour contrasts strikingly with that of the strong ruddy orange and lemon girls. Many, no doubt, commence as the latter, strong in youth and health, to end by olive-picking once the heyday of life is over. The poor olive-pickers, clad only in thin cotton dresses, are apt to become rheumatic, from crouching so long over the ground, at times damp from the winter rains. Such, too often, is the contrast between youth and age in the working classes in all countries.

The olives, once gathered, are taken to the olive-mills, where they are crushed, and the oil is extracted. These mills are picturesque buildings, situated in the ravines in order to command water. In some water is used alone, in others combined with horse-power. The olives are crushed by stone rollers; the pulp is put in stout cylindrical baskets, saturated with hot water, and subjected to great pressure.

The water thus squeezed out carries the oil with it to vats, where it floats on the top and is skimmed off. This water, when it has thus done its duty, is of a dark brown colour, and is constantly seen coming down the ravines, colouring the water-courses. No steam-power mills are as yet known.

The olive oil is often stored in large elegantly-shaped jars, quite large enough to contain a man hidden. On looking into a warehouse and seeing these large jars ranged in rows along the wall I am always reminded of the Eastern tale of "Hadji Baba and the Forty Thieves." These were evidently the identical jars in which the thieves concealed themselves during the night, and were exterminated so cunningly by Morgiana.

The hard roots and wood of the Olive-tree constitute the only fuel used at Mentone, the cooking being principally carried on by means of charcoal, as in France. The native population, however, seldom make fires, except for culinary purposes. They trust entirely to warm woollen garments even on the few really chilly days, when the summits of the surrounding heights are white with snow, and glisten in the sun like the snow-capped mountains of Switzerland or the Tyrol.

Even strangers from the north, accustomed to large coal fires or to stove-warmed rooms for a great part of the year, seldom think of lighting a fire in a south sun-exposed room until evening, and then often more for companionship than from absolute necessity. On the exceptional cloudy and cold days, however, the "baskets" of olive-roots and branches disappear rapidly. They do their duty, too, and warm us; whereas in our own climate such fires would be of no avail, a mere delusion.

Thus, in descending from the north, we have at last reached a region sufficiently sheltered and sufficiently near to the sun for its rays to produce warmth enough to support human life with no other artificial assistance than that of clothes. We no longer require the dense forests of more northern and more fertile regions. We are no longer dependent on the vast coal-fields which the earth contains within its bosom, the remains of the active vegetation of

former periods of the world's history, the fossilized sunbeams, as it were, of ages far, far distant.

Another evidence of the exceptional warmth of the winter climate is the presence of large Euphorbia bushes and of large Carouba-trees. Some species of the Euphorbia, of which there are many, become shrubs in this region, with large ligneous stems. In many of the more protected regions they grow as large as Rhododendron bushes. At Nice I only found them as luxuriant in one spot, the south-east side of the castle hill. In Italy the latitude of Southern Sicily must be reached to find them equally flourishing. They are singular plants, and grow in the most arid spots, on heaps of stones on the sea-shore, in the crevices of rocks, yet with a vigour and luxuriance which is perfectly surprising. Their growth begins with the autumn rains, when they throw out a mass of light green terminal leaves. They then produce numerous small yellowish-green flowers throughout the winter, early or late, according to species. The secret of the luxuriant verdure, under a burning sun, in the most arid spots, of such a mass of delicate foliage, is the existence of a kind of caoutchu in their white acrid juices. This gum prevents the evaporation that would take place from the leaves, and which would soon dry up the foliage of a plant growing under such circumstances, without some peculiar protection. The white milky sap of the Euphorbia is poisonous to man. I recollect reading about cases of poisoning at Malta, attributed to drinking the milk of goats that had fed upon it.

The elegant white silver-leaved Cineraria maritima is found abundantly in the same localities. It grows from crevices in sheltered rocks, generally in the immediate vicinity of the sea, and often attains the size of a large bush. This pretty shrub has been introduced into our conservatories and into our summer gardens as an edging plant for the sake of its foliage, since the taste for foliage plants has become so general, and it is pleasant to find it in its native clime.

The Carouba, or locust-tree, is really one of the glories of this and of other barren but warm regions in the south of Europe. It is a beautiful evergreen tree, vigorous, fresh,

and graceful, with an abundant light-green foliage. It grows in the most stony, arid, and burnt-up places, on rocks and on mountain sides where there is scarcely a particle of soil, and where its very existence is a marvel, a problem, a source of positive surprise and exultation to the beholder. Indeed, the Carouba may be considered an emblem of evergreen vegetation, and a perfect botanical demonstration. Such a tree can only live very partially from its roots, for they often only bind it to the rock on which it grows by creeping into crevices and laying hold of every inequality of ground. It must live in a great measure by its leaves, as most evergreens do, to a very considerable extent. The Carouba-tree bears beans in pods, very useful for the feeding of cattle. Each tree is said to produce, one year with another, twenty francs' worth of fruit. These beans have been introduced of late into England for this purpose. In the almost rainless region on the south-east coast of Spain, between Valencia and Malaga, the Carouba-tree is one of the principal features of the scanty vegetation. In many sun-burnt, scorched districts, this tree, with the Olive and the Opuntia or prickly pear, are all but the only products of the soil. The similarity of vegetation indicates similarity of climate: dryness, summer heat, and winter mildness.

The existence of the Carouba explains why vegetation is principally evergreen in arid rocky spots, where there is little or no soil, and where that little is in a great measure formed by the pulverization of rocks, or contains but slight nutritive elements, as sand for instance. The scanty or poor soil will not feed plants that only bear leaves for a few months in the year, wherewith to extract nourishment from the air, so nature supplies their place by evergreens, which have all the year round millions of lungs, in the shape of leaves, pumping nourishment, in the form of carbon, from the air. In northern climates, in high latitudes, in arid sandy soils, it is the evergreen Conifers or Fir tribe, the Heaths and the Hollies, that thus apply to the air for the nourishment refused to them by the soil. In southern latitudes, such as Mentone, it is the Orange, the Lemon, the Olive, and higher up, in cold mountain regions, Conifers again, as in the north, that perform the

same part. Thus is explained the fact of the vegetation of the Mentonian amphitheatre, a mere rocky mountain-side, being nearly all of an evergreen character. No other kind of vegetation could live and thrive there. The few deciduous trees, such as Oaks, Planes, and Willows, that are found, are principally met with along the margin of the torrents as they approach the sea, where alluvial soil has been deposited into which moisture percolates from the higher mountain regions.

Along with the Carouba may be mentioned Pistacia Lentiscus and Terebinthinus Chio as peculiarly indicative of a dry, sunshiny, southern climate, and of a rocky, arid region. P. Lentiscus is an evergreen shrub, which grows freely in the same regions as the Carouba, flowering during the winter, and is very abundant between Nice and Ventimiglia; indeed, all along the Riviera. I found it even more common in Corsica, where it contributes to form the maquis or brushwood, as also in Sardinia, and in Africa on the ramifications of Mount Atlas. It forms, I believe, one of the chief botanical features of Palestine and Syria.

Terebinthinus Chio is frequently met with on the most sheltered, sunniest, warmest, and most arid mountain sides. It is a ligneous shrub or small tree, and is remarkable as being the last tree or shrub met with in the Desert of Sahara, on descending from the south slopes of the Atlas.

Above the Olive-tree elevation, that is, above 2000 feet or thereabouts, Conifers only are met with naturally, although fruit-trees, Apples, Pears, Cherries, and Vines are cultivated; as for instance around St^{a}. Agnes, a mountain village. The Conifers occupy the lower central hills when the soil is sandy or gravelly from the shore level, and climb up their sides. Where not too precipitous, they also occupy the sides of the highest or back limestone mountain range. Behind the Mentone amphitheatre the Conifers only occupy northern slopes until we reach the Col de Tenda. From the shore level the higher trees appear mere shrubs, owing to the great elevation, but once they are reached, they prove to be respectably-sized trees. Still these forests certainly contain no timber "fit for building men-of-war," as a member of the House of Commons

stated during the debate on the cession of Mentone and Roccabruna to France. They contribute but little to the wealth of the country.

The Conifers which cover the sandy hills, and climb up the limestone mountains, are principally the Pinus maritima, with the Juniper and the Pinus Halepensis or Aleppo Pine, the commonest on the coast and islands of the Mediterranean. They do not attain any very great height, but are healthy and flourishing. The Maritime Pine is the most abundant and hardy pine on the north shores of the Mediterranean, and thrives on calcareous formations nearly as well as on schistic and sandy soils. Although soft-wooded, and not very valuable as timber, it is still extensively used for building and other purposes, for want of better woods. In spring-time the Pine forests often suffer from the attacks of the caterpillar of the Bombyx processionis moth. These caterpillars come to life in large woolly nests suspended in the trees like bags. When fully developed they leave the nest, previous to passing into the chrysalis stage, and form lengthened processions, which are often met with in the forest paths, and are very curious. The caterpillars march one after the other in single file, climbing over everything. They should not be handled, as irritation of the skin follows.

In one spot, in the grounds of the Madonna Villa, in the western bay, are some very fine specimens of the Pinus Pinea, the stone or umbrella Pine, the classical Pine of Italy. One, more especially, a very beautiful tree, throws up a large stem surmounted by an immense umbrella-like mass of brilliant deep-green foliage. There is something peculiarly Italian in the appearance of this noble tree, with its canopy of rich green leaves extending table-like. In Italy it is so often a prominent feature in the landscape, that it becomes associated in the traveller's mind with the monuments and ruins indelibly stamped on his recollection. Indeed, when sitting under the shade of these trees, the deep blue sea at our feet, the clear sky above, and the sharp clear outline of the adjoining mountains around, it is impossible not to feel that we really are in Italy—notwithstanding diplomatic annexations. Iso-

lated specimens only of this Pine are seen at Mentone. At Cannes, at the foot of the Esterel mountain, there is quite a forest of them. I presume a sandy soil is all but essential to their well-being, as it is for most Conifers. The Pinus maritima thriving as stated on calcareous soils, succeeds perfectly at Mentone and covers the Cap Martin, a limestone rock on the sea level, as well as the flanks of the higher oolitic mountains.

The Cork tree (Quercus Suber) is occasionally met with on the Riviera, but is not abundant as on the sandy schistic mountains of the Esterel, where it grows very freely, and is cultivated for profit. The acorns are given to pigs, the bark is used for tanning, and the cork is exported.

The rarity of deciduous trees gives a peculiarly smiling, cheerful, summer aspect to the entire district, with its hills, ridges, and valleys, even in mid-winter. In no part of Italy or Spain that I have visited have I observed the universal winter verdure here witnessed. Even the far-famed bay of Naples, as seen from the sea on entering, offers to the traveller nearly as winterly an aspect in December as England or France. The high ground of Ischia, and of the continent, presents numerous naked Fig-trees and Vines, the aspect of which is very different to that of the green trees that cover the Mentonian amphitheatre. We meet with winter verdure in our own forests of Scotch or Spruce Firs, but then the winter sky is generally sombre, filled with masses of lead-coloured clouds, and the sun is obscured. At Mentone, on the contrary, the sun mostly shines, and generally throws a greater glow on the landscape in January than it does on our evergreen forests in July. The verdure at first appears rather sombre, as it is principally formed by the Olive woods, the Orange and Lemon-trees generally hiding in the valleys, but the eye gradually gets accustomed to the hue. In the eastern bay, however, as we have seen, there are many groves of light-green Lemon-trees, occupying the open mountain side for the first 1200 feet in altitude.

The deciduous trees are principally Planes, Willows, and Fig-trees. The Willows line the margin of some of the

larger torrents as they approach the sea. The Planes are planted in avenues, for the sake of the dense and grateful shade they give in summer. One avenue is the main road from Nice, and is continued into the town; the other is along the banks of the torrent which descends from the mountain by the side of the Turin road, in the valley "du Carei." This latter is the principal summer promenade of the inhabitants. There are a few deciduous Oaks and Chestnuts scattered about the hills and the valleys.

The oriental Plane has been cultivated from time immemorial in Asia Minor and in Greece, and from the time of the Romans in Italy, but for its shade only, the wood not being valuable. In former days it was treated with great reverence and respect. No tree in these climates can be compared to it for beauty and density of foliage in summer. In the south of Europe, and in the East, it is hardy and vigorous, attaining very great size, and flourishing in the midst of towns. This latter power it owes in part to the habit of shedding yearly a portion of its bark; it thus, as it were, gets rid of its soiled outer garments, contaminated by the town atmosphere. The resistance of the Plane tree to city influences is well exemplified at Toulon. The dense and healthy grove that casts so impenetrable a shade on the "Place" in the very centre of the town, is composed entirely of Planes. Owing to this tree bearing the pruning knife as well as an English holly, in towns the top branches are generally clipped back ruthlessly when spring arrives, so that they may form, by their new shoots, a regular canopy of verdure. Many of my readers have no doubt been awakened at early dawn by the chorus of innumerable birds that frequent the verdant grove of the market-place at Toulon. A similar chorus may be heard each evening in the trees growing in the market-place near the eastern bay at Mentone in the autumn and early part of the winter; indeed, until the leaves have all fallen.

These trees do not lose their leaves until the nights become cold, so that they are often preserved until the end of December. The ball-like capsules which contain the

seeds remain hanging from the terminal branches all winter. They are larger than in the American Plane tree, which we cultivate with success in England, and which, like the oriental, bears well the atmosphere of towns, as may be seen in Berkeley Square. The pruning takes place early in March; and the new flowers and leaves appear in April, the former preceding the latter. The oriental Plane tree, although quite at home, does not appear, however, to reach its full size in the south of France and Italy. There is a Plane in the Gulf of Lepanto in Greece, the trunk of which is forty-six feet in circumference; and one on the Bosphorus, the trunk of which is one hundred and forty-one feet in circumference at the base. De Candolle thinks it must be two thousand years old, and that it is one of the largest trees in the world.

Fig-trees thrive, as everywhere else in Italy. Fortunately, however, for the lovers of the picturesque, they are not very numerous at Mentone. They lose their leaves early, by the end of November, and do not regain them until April, and their clumsy, graceless, weird-like branches, are anything but ornamental during the winter. The fruit is of first-rate quality.

Owing to the absence of frost in all but very exposed situations, many of our English garden flowers, which are cut down by the first frosty night, continue to flourish and bloom all the winter through. This is the case, for instance, with the Geranium, the Heliotrope, the Verbena, the Nasturtium, the Salvia, and some kinds of Roses, including the China Tea-rose, which continue to flower throughout the winter in sheltered gardens. The Nasturtium, an annual with us, becomes a perennial ligneous shrub, as in Peru, its native country. So does the Cobæa scandens, which has a ligneous stem, and flowers continuously in winter. There are also many flowers peculiar to much more southern climates, which bloom throughout the winter. But as I purpose devoting a special chapter to cultivated flowers and horticulture, I shall now confine myself to wild nature.

Wild, sweet-smelling Violets appear about the middle of December in the warmest spots. The Narcissus nivens,

and other flowers of the same genus are found equally early. By the end of January violets have become a weed, flowering from the crevices of every wall, along every path, and in every torrent-bed that the sun reaches. The delicate Lycopodium of our hot-houses and conservatories replaces or accompanies the mosses of the north, growing freely in all damp places throughout the winter. Wild Anemones of different species, some of which are very beautiful, begin to blossom in December or January. They are rapidly succeeded by Daffodils, Narcissus, Hyacinths, Tulips, Gladioles, Hepaticas, and Primroses. All these flowers are found wild, but only in certain regions known to the "initiated" and to some of the donkey women. The white Alyssum, which we use for garden edgings, is very common, and flowers throughout the winter, as does a large species of daisy.

Mignonette grows wild in some localities, on the terraces of the eastern bay for instance, but it has but very little odour, unlike the sweet-scented species (*Reseda odorata*) of our gardens, which is a native of the opposite, or African shore of the Mediterranean. The Caper plant, a tropical shrub, thrives and produces fruit abundantly, a fact in itself evidence of a warm climate. It is of deciduous habit, and losing its leaves early in the autumn merely to regain them late in the spring, does not at all contribute to winter decoration. The Pepper-tree (Kinus Mulli) is cultivated in gardens, on account of its foliage. It remains in leaf during the winter, and is a handsome tree with pendulous leaves and pretty red berries in clusters. The Australian Eucalyptus, or Gum-tree, grows and thrives wherever there is a certain depth of soil, with its usual rapidity and luxuriance.

Succulent plants thrive wherever planted, and in some regions have become quite wild. The large Mesembryanthemum is peculiarly luxuriant in its growth, and brilliant in its bloom. The absence of winter frost, the heat and dryness of summer, and the heavy rains of autumn and spring, seem quite to assimilate the climate to that of its native country, the hills and plains of the Cape of Good Hope. It is in full flower by the middle of April.

The Prickly-pear (*Opuntia vulgaris*), the commonest of

the Cactaceæ in the Mediterranean, flourishes in this climate as well as in the rocky mountains of Mexico, its native country, as may be seen by the thriving specimens in various parts of the town, and in my Grimaldi garden.

The Aloe is equally at home in the district, indeed all over the Mediterranean basin. But at Mentone it does not seem to be appreciated as at Nice, where many magnificent specimens are to be seen. Indeed, the Mentonians do not appear to value landscape gardening, or gardening of any kind. Very few flowers are cultivated, except for preparing perfumes or in the gardens attached to the houses let to strangers. They seem to think it a loss of time to bestow labour or trouble on anything that is not destined to be consumed as food. This complete absence of the intense love of flowers and ornamental gardening which pervades all classes of society in more rigorous climates, characterizes Southern Europe—Italy, France, and Spain. Where do we see the Rose, the Clematis, the Jasmine, climbing over the peasant's cottage as in England? One reason is the difficulty of keeping plants alive and flourishing without watering, during the long summer droughts, and the difficulty and expense of finding water. But this does not apply to the Aloe or the Cactaceæ, which delight and thrive in the driest regions. And what can be more grandiose than the immense Aloes seen in the vicinity of Nice, vegetable giants, one of which is often as large as a small house! Is there not also great interest in watching the large flower-spike which, after the Aloe has lived a long life of dignified repose, shoots up in a few weeks, on a stem like a small Fir-tree, from fifteen to twenty feet high, utterly destroying, by its rapid, exhausting growth, the parent plant? Every winter many of these destructive children may be seen rising from their unfortunate parents, doomed to die with their offspring, among the Aloes at the Chateau of Nice. Aloes in flower may always be observed also at Monaco, where there is a grove of young Aloes on the terraces of the old town, but smaller, and of more recent growth than those of Nice.

The Lily tribe, to which the spiny Aloe belongs—unlikely as it may seem to the non-botanical observer—has another

representative at Mentone which covers the terraces in February with white clusters of lovely flowers, and which we can also claim, a species of garlic, the Allium Neapolitanum. To the same natural order belongs the Asparagus, a species of which grows wild in this district, and is nearly allied to the wild Asparagus found in England.

The Oleander, or rose Laurel, as the French call it, with us a stove plant, grows in the open air to the size of a small tree. It may be seen both along the western and the eastern bays, along the sea-shore, and is also found truly wild in some of the valleys to the east. From the brilliant red hue of its flowers when in full blossom it has given the name of Campo Rosso to a small town in the valley of Dolce Acqua beyond Ventimiglia. It fringes the margin of the rivers in Mount Atlas, thus forming a botanical link between Europe and Africa. The oleander flowers in the summer and autumn, and as neither its habit nor its evergreen foliage is remarkable, it does not attract much attention. The Tamarisk, with us a well-known sea-side shrub, also becomes a small tree with a good-sized trunk. As with us, it loses its foliage in winter, but regains it early in April. There is a row of these Tamarisk-trees skirting the beach in the western bay. They grow in the shingle that forms the beach, a few feet from the sea, thus illustrating, as in the north, their peculiar marine sympathies. Some plants, like some men, thrive anywhere, are cosmopolite, whilst others flourish only in their native soil, under special conditions of climate, and without them pine and eventually die.

As illustrative of the cosmopolite plant may be mentioned the friend of our childhood, the common Blackberry, which we are glad to welcome even at Mentone. In the warmest, wildest, and rockiest regions it grows as vigorously, as joyously, as in any quiet lane in England or Scotland, only in such situations it becomes an evergreen—in this sense that it does not lose one set of leaves until it has got another. It is, in truth, a singularly hardy plant, with a most peculiar power of adapting itself to circumstances. All climates seem to agree equally well with it—

hot or cold, rainy or dry, maritime or inland, plain or mountain. I have never been to a spot in Europe or Africa where I have not found it, from Sutherlandshire to the south of Sardinia, and to the margin of the Sahara desert. I must confess to a certain degree of surprise when I saw this favourite of our shady English lanes growing at Mentone with wild and determined luxuriance, filling up the bed of dry torrents, climbing up trees to a height of twenty or thirty feet, and choking passages between lemon terraces on the mountain side, and that in regions where it often does not rain in summer for six or eight months together, and under the glare of the fierce Mediterranean sun. Certainly it must have a mission to fulfil, and perhaps that mission is to supply a grateful fruit to the children of the very poor. The days when they go blackberrying are truly festive days to them, and but few are the fruits they can obtain in our climates. Its sight is always welcome, as is all that reminds the sojourner in foreign lands of his native country, and of the haunts and pleasures of his childhood and of his early years.

In spring a very familiar plant shows its large, velvety mealy leaves, in many places, on the road sides, and at the bottom of walls—the Verbascum. At the same time appears in great abundance and luxuriance, in the same regions, a large, elegantly-variegated white and green Thistle. They both are in flower early in April, as also is the Antirrhinum, or Snapdragon, which is found wild on the warm terraces. It belongs to the same natural order as the Verbascum, that of the Scrophulariaceæ. This is also the time when the elegant little grape Hyacinth, the star of Bethlehem, the Cistus or rock rose, the prickly Broom, the Cytisus, the Coronilla, and many other beautiful flowers are in full bloom, and transform the ravines and terraces into regular gardens. I must not either forget to mention the ground orchids, of which many different kinds are found—the fly Orchis, the spider Orchis, the Orchis lutea, the bee Orchis, the long-bracted.

The vegetation of course varies according to the nature of the soil. Some of the lower hills are of sandstone, which

impresses on the flora its peculiar character. The trees are Pines; the shrubs, the Arbutus, the Myrtle, the Juniper, prickly Broom, mountain Lavender, and Heath. At Christmas our common ling Heath is in full flower. Another very beautiful Heath—the Mediterranean or arborea—flowers in February and March. It has an erect stem, rising to the height of five or six feet, and its spikes of numerous white flowers are most lovely.

The most remarkable of these sandstone hills is the one between the Cabrole and Gorbio valleys, called the St^a. Lucia and the Arbutus ridge. The vegetation I have enumerated is quite that of the Corsican and Sardinian granitic and sandstone mountains; it is also that of the same formations on Mount Atlas, in Africa. Thus a couple of hours spent on these hills give a most graphic and true idea of the vegetation that covers some of the most lovely and romantic regions of the mountains of Corsica, Sardinia, and of North Africa. It is a little corner of Africa encased in the Mentonian amphitheatre, and this identity of vegetation seems to prove that the day has been when the Maritime Alps, the Apennines, and Mount Atlas were one system of mountains.

A species of evergreen creeping Smilax, or Sarsaparilla, with variegated triangular leaves and groups of red berries, is very common. Our old friend the Ivy is constantly met with in the valleys and watercourses, wherever the soil contains lime. Ferns are very numerous throughout the district, and their growth is favoured by the peculiar structure of the terraces. The walls by which these terraces are bounded are formed by the simple superstructure of large stones, and the earth gradually filtrating into their interstices, forms a cool, damp bed, admirably adapted to their growth. All the old terraces are clothed with the Ceterach fern, the Asplenium trichomanes, and the Asplenium adiantum nigrum, which, with the Capillus veneris, or maidenhair Fern, are the most common. The latter is a mere weed, and waves its beautiful fronds near every tank, every brook, every small irrigation canal, indeed, wherever there is either running or stagnant water. The Pteris aquilina, or brake Fern, is common, but it is a summer Fern, as with us, its

fronds only appearing in April, when the invalids are preparing to migrate northwards. The Scolopendrium, the Polypodium vulgare, the Ruta muraria, Asplenium Petrarchæ, and Fontanum, the Grammitis Leptophylla, and the Cheilanthes odorus, are less universally distributed, although by no means uncommon. On the whole, I found twelve different species of ferns, within a few hundred feet of the sea, most of which are also met with in England. In the high mountains there are other species to be gathered. I was rather surprised in the summer that followed my first winter at Mentone to find the Asplenium trichomanes growing with equal luxuriance, not only on a wall in the Versailles gardens, but also on the ruins of an old chapel in a solitary islet at the northern extremity of wild and beautiful Loch Awe, in the far north, on the west coast of Scotland.

For a full account of the vegetation of the Genoese Riviera I would refer to M. Ardoino's "Flore des Alpes Maritimes," and to Mr. Traherne Moggridge's very beautiful book, "Contributions to the Flora of Mentone and to a winter Flora of the Riviera from Marseilles to Genoa." Mr. T. Moggridge has also published a most interesting book on "Harvesting Ants and Trap-door Spiders. Notes and Observations on their Habits and Dwellings." It is a model of close observation, and a charming illustration of the way in which the leisure of invalidism may be made a source of delight and joy by merely turning to nature.

Nearly all the cultivated vegetation of the Mentone amphitheatre—Lemon, Olive, and Orange-trees—except what is found on the narrow seaboard, grows on terraces, built, or excavated on the side of the mountain. These terraces have been produced by the labour of many ages. The mountains and hills rise too rapidly from the sea level for even Olive-trees to grow without this preliminary step being adopted to support and form the soil. A terrace is a ledge cut in the hill side. The stone taken out of the hill forms the wall, the earth from the crevices, the broken stones, and a little earth brought from other regions, form the soil. These terraces are expensive to make, as much so, I have been told, as houses; whereas the product is prospective

only. The man who builds them sinks his capital more for his children's benefit than for his own. If he plants Lemon or Orange-trees he must also dig a large tank, and be able to get water to fill the tank, in order to irrigate them in the rainless summer. If he plants Olive-trees they grow so slowly that in twenty years the produce is still insignificant. The stones, even, have to crumble into soil, under the influence of moisture, wind, and weather, and manure has to be added, before the terrace can produce the green crops which are generally planted on those occupied by young trees.

And yet the mountain sides are scarred with these terraces, which rise in successive tiers, and are the foundation of the agricultural riches of the country. They are the evidence, in stone, of the thrift and industry of past generations—a silent but eloquent monument of the domestic virtues of the forefathers of the present race. Many new terraces have been built during the last few years, owing to the increasing prosperity of the inhabitants.

Many new tanks have also been constructed. Their formation is attended with a heavy expenditure, as I know to my cost. The walls have to be made very thick to support the pressure of the water inside, and the entire fabric has to be cemented several times, internally, with hydraulic cement, to prevent the escape of the water. These tanks can be filled at the end of winter, before the springs are divided between the proprietors, a proceeding which usually takes place in May. The water of a spring is as valuable as the land, and is owned, so many hours each week, by the landed proprietors. Without such a right to water land is all but in mountain localities like Grimaldi. This village and the vegetation around it, owe their existence to a spring thus appropriated. In winter, by immemorial right, the water of the spring belongs to two olive mills worked by water power.

CHAPTER II.

GEOLOGY.

THE CRETACEOUS OR SECONDARY PERIOD—THE NUMMULITIC OR TROPICAL PERIOD—THE CONGLOMERATE AND THE GLACIAL PERIODS—THE BONE CAVERNS—PRE-HISTORIC MAN.

AGRICULTURAL GEOLOGY.

"There rolls the deep where grew the tree,
O earth, what changes thou hast seen!
There where the long street roars, hath been
The stillness of the central sea.
"The hills are shadows, and they flow
From form to form, and nothing stands;
They melt like mist, the solid lands,
Like clouds they shape themselves, and go."

TENNYSON, *In Memoriam*, cxxii.

THE geological features of the country are very interesting, and much may be observed in a small compass. The high range of mountains which form the amphitheatre belongs to the lower cretaceous rocks, and is composed of very fine-grained limestone full of minute globular animal organisms. At both the eastern and western extremities of the Mentone bay this formation juts out into the sea. At the eastern extremity, the road to Genoa is cut out of the side of the mountain, and ascends to a great elevation, crossing a deep ravine in this limestone by a bold bridge, the Pont St. Louis.

A short distance on each side of this point are observed some of the middle and upper cretaceous strata which replace the upper green sand, gault, chalk, marls, and white chalk of England. According to my learned and deeply regretted friend, the late Professor H. D. Rogers, of

Glasgow University, who was an ornament to his native country, the United States of America, they form the following strata:—a group, consisting 1st, of blue shales, with intercalated thin layers of micaceous sandstone, sometimes abounding in the so-called green sand, eminently characteristic of the middle cretaceous strata; 2nd, of a coarse, usually very thick bedded sandstone, often conglomeritic, intercalated, in its upper part, with beds of shale like those of the group that underlies it.

Above these upper secondaries commences the tertiary system by a well-developed eocene nummulitic limestone, full of nummulites, which in certain localities is overlaid by argillaceous strata and these by a remarkably coarse conglomerate, both of the pleiocene age.

These strata are observed on both sides of the Pont St. Louis, in the same order, eastward towards the town of Ventimiglia, and westward towards Roccabruna, at the base of the Turbia ascent. At both these points appear the pleiocene clays and conglomerate. Thus the lower hills, which occupy the ground-plan, as it were, of the Mentone amphitheatre, represent from east to west, different strata between the lower cretaceous limestone and the pleiocene conglomerate. These strata are also reproduced in the same order, between the St. Louis rocks and Ventimiglia, near which the tertiary clays and conglomerate are found equally well developed.

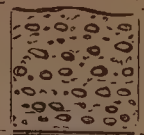
The age and geological position of these pleiocene strata are indicated by the fossils they contain. My friend, Mr. Moggridge, who has devoted much time and thought to the geology of this district of the Maritime Alps, has found, near Ventimiglia, many fossils in the clays which underlie the conglomerate, characteristic of the later pleiocene period. The accompanying chart, which Professor Rogers kindly drew up for this work, will show at a glance the above details.

The conglomerate is magnificently developed both at the entrance to the Mentonian amphitheatre, on the Nice road, near the village of Roccabruna, and seven miles further on, at Ventimiglia. It is, indeed, one of the most interesting features in the geology of the district. The deposit is

) AND BORDIGHERA.

	Names	Physical Conditions and Events indicated by the several Formations.
CAINOZOIC OR TERTIARY.	Pl	heterogeneous mixture of rounded, far-transported fragments, some ved from the high Maritime Alps, betokens a period of very energetic e earth's crust in all this region.
		s imply a period of long repose in the sea, probably that which ensued iocene volcanoes of Central France had become torpid.
	No M	existence of these formations along this part of the Mediterranean ates *dry land*, when the meiocene plain of Switzerland was all under
	Middle (1540 ft. Eng	-bedded, massive, fossiliferous limestone shows, in its uniformity of tex- ance of organic remains, and its almost total freedom from water- or clay, that it was the deposit of a very long and quiet period. Being le on the cretaceous strata, as the upper eocene and meiocene are dicates a resubmerging of some wide tracts of the district beneath the riod of prolonged quiet, in which the sea's bed abounded in animal life.
	No Low	ce of this group shows that the cretaceous sea-bottom was now dry he middle eocene or nummulite sea covered it.
MESOZOIC OR UPPER SECONDARY.	(Equiva Chalk Ma	arenaceous group, containing no hitherto discovered organic remains, hat doubtful geologic age; but as it seems to overlie, with true paral- ct conformity, the "cretaceous shales," we cannot go far astray if we "upper cretaceous." Its pebbles denote an interruption to the long preceding periods, and thus it appears to foreshadow those prodigious of the earth's crust which attended the cessation of the Mesozoic e coming in of the Cainozoic with an almost wholly altered physical
	(Equiva Gault of F	osits contain fossils, and the materials all indicate a long period of ntary action, when the bottom of the ancient cretaceous ocean was ely-wafted very fine clay and mica and sand, and the chemically con- sand, or green granules.
	(Equiva Wealden F	ta being very full of minute marine animal fossils, and being, moreover, minated, were evidently formed at the bottom of a deep sea during a longed repose of the underlying earth's crust.

GEOLOGICAL CHART OF THE STRATA BETWEEN MONACO AND BORDIGHERA.

	Names of the Groups and their English Equivalents.	Aspect of the Strata.	Descriptions of the Strata.	Approximate Thicknesses.	Physical Conditions and Events indicated by the several Formations.
Cainozoic or Tertiary.	Pleiocene Conglomerate.		A very coarse conglomerate, in thick, massive beds, pebbles of all sizes, 1 in. to 2 ft. in diameter; at Roccabruna and Ventimiglia.	Apparently 600 or 800 ft. thick.	This very heterogeneous mixture of rounded, far-transported fragments, some of them derived from the high Maritime Alps, betokens a period of very energetic action in the earth's crust in all this region.
	Pleiocene Clays.		Beds of blue and whitish clays, fine in texture, with many pleiocene fossils, all of a *marine type*, near Ventimiglia.	Probably 200 ft. thick.	These beds imply a period of long repose in the sea, probably that which ensued after the meiocene volcanoes of Central France had become torpid.
	No Meiocene nor Upper Eocene.		Both meiocene and upper eocene absent.	Meiocene in Switzerland, 2000 ft.	The non-existence of these formations along this part of the Mediterranean region indicates *dry land*, when the meiocene plain of Switzerland was all under water.
	Middle Eocene. (1540 ft. thick in England.) { The Bagshot, Headon, & Osborne Strata of England.		A blue fossiliferous, easily fractured limestone, replete in fossil nummulites of at least four species: is a rock easily dressed, and is in much demand as a good building stone; above St. Louis Bridge.	Does not exceed 400 or 500 feet.	This thick-bedded, massive, fossiliferous limestone shows, in its uniformity of texture, abundance of organic remains, and its almost total freedom from water-strewn sand or clay, that it was the deposit of a very long and quiet period. Being unconformable on the cretaceous strata, as the upper eocene and meiocene are absent, it indicates a resubmerging of some wide tracts of the district beneath the sea, and a period of prolonged quiet, in which the sea's bed abounded in animal life.
	No Lower Eocene. { Which in England is 730 ft. thick.		A total blank as to strata in this part of the series.	In England 730 feet.	The absence of this group shows that the cretaceous sea-bottom was now dry land, until the middle eocene or nummulite sea covered it.
Mesozoic or Upper Secondary.	Upper Cretaceous. (Equivalent of the White Chalk and Chalk Marls of England.)		A succession of thick beds of rather loosely-cemented, yellowish-grey sandstones, some of them pebbly, and the pebbles more or less angular, and of very miscellaneous mineral characters. Between the St. Louis rocks and Ventimiglia, and inside the Mentone amphitheatre.	Probably between 2000 and 3000 ft. in thickness.	This very arenaceous group, containing no hitherto discovered organic remains, is of somewhat doubtful geologic age; but as it seems to overlie, with true parallelism or strict conformity, the "cretaceous shales," we cannot go far astray if we regard it as "upper cretaceous." Its pebbles denote an interruption to the long repose of the preceding periods, and thus it appears to foreshadow those prodigious disturbances of the earth's crust which attended the cessation of the Mesozoic ages, and the coming in of the Cainozoic with an almost wholly altered physical geography.
	Middle Cretaceous. (Equivalent of Upper Greensand and Gault of England.)		A group of grey and blue argillaceous and sandy shales, imbedding thin laminæ of micaceous sandstone, more or less replete in the "cretaceous greensand;" including also some beds of argillaceous limestone, imbedding layers of nodules of genuine "*chalk flint*," as above.	Probably about 2000 ft. thick.	These deposits contain fossils, and the materials all indicate a long period of quiet sedimentary action, when the bottom of the ancient cretaceous ocean was receiving widely-wafted very fine clay and mica and sand, and the chemically concreted greensand, or green granules.
	Lower Cretaceous. (Equivalent of Lower Greensand and Wealden beds of England.)		A pale pinkish, very fine-grained limestone, in some beds so full of minute globular animal organisms as to cause the rock to closely resemble a much indurated *oolite*, constitutes the framework of the district — the large mountain masses.	Perhaps 1000 ft. thick.	These strata being very full of minute marine animal fossils, and being, moreover, very little laminated, were evidently formed at the bottom of a deep sea during a period of prolonged repose of the underlying earth's crust.

composed of large stones, rounded by water and friction, imbedded in calcareous gravel, constituting what has been termed pudding-stone, and is very extensive; it indicates a period of great convulsion, a period when the waters of the Mediterranean were probably thrown with terrific violence on the mountain masses which form the Maritime Alps in the far off background. Porphyry, and granite stones of large volume, are common in this conglomerate, and these formations are only met with at a considerable distance from the Mediterranean coast.

The village of Roccabruna is built on the conglomerate, which ascends much higher on the sides of the mountain along the Nice road. Tradition says, that Roccabruna was in former days some two hundred feet higher up the mountain, but that a gigantic land-slip occurred, and that the bed of boulders on which it was built descended bodily to its present position. I much doubt, however, the veracity of this the popular view as to the original habitat of the "brown rock" village.

The various geological formations observed in the limited Mentonian amphitheatre bring home to us, "in words of stone," some of the most interesting phases through which the world has passed during recent geological periods. The word recent, however, must be understood to apply to periods separated from us by countless ages, and only recent as compared with the unfathomable periods of time during which the primary and secondary strata were formed.

The lower cretaceous limestone rocks, which form the basis of the Mentonian amphitheatre, and the strata therein found that correspond to our chalk or upper cretaceous era, represent the highest or most recent formations of the secondary period of geology. The nummulitic limestone which crowns the St. Louis rocks, and which is being quarried for building purposes where the first descending eastern bend occurs, belongs to the eocene or tertiary formation.

The nummulitic formation is not the earliest of the eocene period, but occupies a middle position. At Mentone the lower eocene formation is not represented, it is a blank; nor are the upper strata of the eocene system, nor any of

the miocene. They are all wanting up to the pleiocene clays which underlie the conglomerate. At least such is Professor Rogers' view of the geology of this district, the result of careful analysis and of many excursions of inquiry in which I had the pleasure of his refined and intellectual companionship, and the opinion of so able a geologist must have great weight. He considers, as we have seen, the shales and sandstones, which lie east and west of the St. Louis limestone, to be members of the upper cretaceous family, and not tertiaries, as is generally supposed.

NUMMULITES.

1, 2, Nummulites lævigata; 3, Section of do., showing its cells.

There is a feature of great interest connected with the nummulitic limestone. It belongs, most indubitably, to the middle eocene, it was unquestionably formed under salt water—for the nummulites or coin-like shells which it contains are the shells of salt water testaceæ—and yet this formation is found highly developed on the highest and most central portions of the Alps, the Carpathians, the Pyrenees, and the Himalayas. This fact alone would suffice to prove that these stupendous mountain chains are of comparatively recent formation. They could not have existed at the time the nummulitic limestone was forming under the sea, at a time when England was already peopled by various quadrupeds, and must have been raised above the sea level subsequently to that period, by some mighty convulsion of nature.

During the period of the earth's history when the nummulitic limestone was formed, and during the subsequent or miocene period, the climate of Europe was warm

or subtropical. The vegetation was all but that of the tropics of the present day, as testified by the beds of lignite or wood coal belonging to this period, which are found in these strata. The animals of the tertiary period were the large and curious precursors of the present races. An idea of these animals may be gained by the specimens that have been so curiously reproduced in the gardens of the Crystal Palace. They were remarkable for their size and development, which indicated favourable conditions of material life, abundance of food, and a genial climate.

The sea and rivers were also peopled by exuberant and grandiose life, indicative of tropical warmth—large Sharks, and Rays, Turtles, Dolphins, and such like. The nummulites, or coin-like shells, found in the St. Louis quarry, were living in boundless profusion in the warm seas. So abundant were they in the oceans of those days that thousands of miles of nummulitic limestone several hundred feet in depth, all but entirely composed of their remains, are found in some regions of the Old World.

Then, after the pleiocene period a dark cloud came over the earth. From some unknown cause its temperature lowered, and the glacial period set in. Part of Europe and Asia subsided under the sea as the climate became cold. Glaciers established themselves on the mountains of a considerable portion of what remained of the Europe of to-day, and on other regions now submerged, down to the 36th parallel of latitude (Agassiz). The tropical vegetation gave way to a northern flora. The tropical animals died out or emigrated to more southern regions, and were superseded by new forms of life more adapted to a boreal climate.

The material world went on as before, under the influence of the same laws. The rain, the frost, the air disintegrated the rocks, the detritus of which was carried by rivulets and rivers to the sea. These fragments, large and small, were rounded and polished both by the action of the waters that brought them from the heights, and by the action of the seas to which they were carried; as is the case with the shingle on modern shores. Huge portions of the glaciers, that reached the sea in many places, were broken off during the short summer. Covered with rocks, stones, and sand,

which they brought from the mountains, in the ravines of which they were formed, they sailed out to sea. Tens of thousands of icebergs now sail every summer in the same way, into the Atlantic from the polar regions. On melting, their cargo of gravel—for of such is gravel—of boulders, and of large rocks, is now deposited, as formerly, at the bottom of the ocean.

After an incalculable period of time a change again came over our globe. The warmth of the sun again reached us, and the submerged portions of Europe, Asia, and North America, again began to rise; as also, no doubt, did regions which for the first time appeared above the waters. This rise appears to have been gradual, as well as the improvement in climate which accompanied it. Thus, by slow degrees, the present state of the earth was attained.

The conglomerate formation observed at Roccabruna and Ventimiglia extends over an immense area between the Esterel and San Remo, and on the south sides of the Maritime Alps. In some regions, also, it attains extreme development. Thus, it is found on the course of the Var and of the Vesubie, as also on a great part of the right side of the Roya valley. On the left side it principally forms the mountainous elevation which separates the Roya from the valley of the Nervia. Above Bordighera, at the Testa de Alpe, according to Dr. Nièpce of Nice, it attains an elevation of above 5000 feet.

Dr. Nièpce has recently published in the *Revue de Nice* (1874) a series of interesting articles on the tertiary formations, and on the conglomerates of the department of the Alpes Maritimes. The results at which he has arrived corroborate the views of Professor Rogers, as given in his chart, and seem so consistent with our geological knowledge, and with reason, that I think I cannot do better than reproduce them.

The conglomerates, or pudding stone, were formed under the sea and on the shore by the crushing of rocks and the dashing of large masses of water against the rocky shore, which must have characterized the frequent and terrible convulsions that occurred during the later tertiary period.

In this region, the Apennine system and the Alps system

of mountains meet, as it were, and during the earthquakes, volcanic eruptions, and upheavings, which succeeded each other at that period of the earth's history, the conflict between water and rock, the grinding and crushing that took place, must have resulted in the formation of immense masses of shingle, such as we now see at Brighton, Dover, and Dieppe. Formed thus under water, before the glacial period, an upheaval at the end of the pleiocene epoch raised the conglomerates to their present site, where they became cemented by calcareous infiltrations.

Some geologists have maintained that these conglomerates are deltas of local rivers existing or "defunct." But this Dr. Nièpce denies on convincing grounds. The Siagne, the Var, the Roya, the Nervia, must have come into existence subsequently to the formation and upheaval of the conglomerate. Fissures were rent in the latter during subsequent earthquakes, volcanic eruptions, and upheavals, and thus were formed the present beds of these rivers. Traces of violent volcanic action are found all over the country, such as the presence of volcanic rocks at Beaulieu, Antibes, Cannes, Esterel, independently of the upheavals, twistings, and convulsions, everywhere to be seen.

I am pleased to find that Dr. Nièpce supports, by his researches and experience, the opinion I expressed in former editions as to the presence of traces of glacial action in the Alpes Maritimes. Thus he states that on the sides, both of the Roya and of the Var, especially at Colomas in the Var valley, he has found well marked ice erosions and polishings on the conglomerate itself. This fact is one of the arguments on which he founds the opinion that the formation of the conglomerate, and of the rents in it which constitute the river beds, were antecedent to the glacial period.

Admitting that such was the case, the beds of these rivers, especially that of the Roya, afford a good illustration of the way in which glacial action scooped out a river valley, and transformed a mere fissure or rent into a wide open estuary.

The valley of the Roya has all the characteristics of a glacier-excavated valley, according to the most recent writers on the subject (Hooker, Lyell, Ansted). It is very

wide and very deep. It appears much more probable that it was excavated by the action of a glacier, formed by millions of tons of ice, slowly descending to the sea, grinding its way through rocks and mountains, than by the wearing power of the small river that now occupies its centre. Glaciers must have extended not only as far as this coast in the Mediterranean (43°), but much more to the south. I found most undoubted evidence of glacial action, moraines and boulder drift, in the south of Corsica, between Sartene and Bonifacio.

It is worthy of notice that the upheavals of the mountains, hills, and ridges along this coast have all taken place by movements in a direction from south-east to north-west, and *vice versâ*—that is, along a line from the volcanic centres of Etna, Stromboli, and Vesuvius, to the extinct volcanoes of Auvergne, in France. The rocky summits, the crests of the stony waves, all lie at right angles to this direction.

Although there are no igneous rocks in the Mentone amphitheatre, they are found very near, as we have said, at Beaulieu, Villefranche, Antibe, and in the upper part of the valley of the Roya, and the evidence of igneous action is everywhere seen. In some instances the stratification of the limestone has been destroyed by its influence—in many the limestone has been crystallized in patches, transformed into marble. In some regions, as at the Cap Martin, it has been honeycombed, fretted into holes and cavities, evidently by the action of steam. All these facts are evidences of the terrible convulsions to which this region of Europe was subjected in former periods of the earth's history, and especially during the tertiary era.

Thus, in this little Mediterranean bay, do we find various important phases of the earth's marvellous history stamped in indelible characters. On the east of the amphitheatre are rocks, the nummulitic, which point to sunny skies, warm seas, and exuberant life, existing previous even to the raising of the main chain of the Maritime Alps, for countless ages. On the west are conglomerate formations which preceded a period of polar cold, of gloom and barrenness, that also existed during countless

ages. Around is the evidence of another era, the present; itself destined unquestionably to ultimate change.

The glacial period which immediately preceded our era appears to have been general, that is, to have extended to both hemispheres, the tropics alone escaping its disastrous influence. The gravels and glacier-drifted boulders and rocks which testify to its existence, are found in Australia and South America, as well as in Asia, Europe, and North America. Most of the geologists who have studied the glacial period during the last few years have simply recognised and described it, without attempting to explain its causes. Various attempts, however, have been made to unravel this geological mystery. Thus, M. Babinet, of the French Institute, has advanced an astronomical explanation which finds favour with many thinkers.

Fixed stars, it is well known, are suns, comparable in all respects to the sun which forms the centre of our planetary system. Now some stars have proved "variable" within our astronomical range of time; that is, they have shone with variable brilliancy at intervals of longer and shorter duration, or they have even disappeared totally for a time. Some well-known stars in ancient catalogues have disappeared entirely, and have never returned; they are lost stars. Lastly, some stars have appeared and shone with great brilliancy for a short time, and have then disappeared for ever. Such was the *Pilgrim* star, which appeared in 1572, shone as brilliantly as the planet Venus, and after a year disappeared. It is supposed that the variable stars are diminished in splendour or even obscured at times by the contact of matter existing in space, to which the name of "cosmic clouds" has been given, and which is neither comet nor planet. If our sun is a variable star, exposed to the periodical contact of such cosmic clouds, which would intercept light and heat, the glacial period is explained, and its return at some time or other becomes possible, if not probable.

It has been suggested by Colonel James, of the Ordnance Survey, that the changes of the earth's climate in geological periods may be due to changes in the inclination of the earth's axis, brought about by alterations in the crust

of the earth gradually affecting the centre of gravity. Colonel Drayson, in a memoir read before the Astronomical Society in 1870, attributes the glacial period and other changes of climate on the earth's surface geologically evidenced to the precession of the equinoxes. He states, as a result of his researches, that the pole of the earth traces a curve in the heavens which is a circle round a point 6 degrees from the pole of the ecliptic, and that this same curve gives an obliquity of upwards of 35 degrees for the date 13,000 B.C. Thus the date of the last glacial period would be fixed, and it must have extended over the whole of the Northern hemisphere, down to the 54th degree of latitude. According to this view, the pole of the heavens traces a circle in the heavens in 31,000 years, the centre of this circle being a point 6 degrees from the pole of the ecliptic.

Professor Rogers thinks that at the end of the pleiocene period the land which separates the head-water of the Baltic from the Arctic Ocean was probably below the level of the Baltic. Even now it is only a few hundred feet high, and within historic periods there has been a continuous, although slight, upheaval. If such was the case, the passage of a cold arctic current, with icebergs, down the Baltic, may have modified the climate of Europe, so as to account for the glacial period, which the Professor considers to have been much exaggerated by recent writers. Similar views have been supported with great talent in a recent work, "Frost and Fire," by Mr. John Campbell.

These explanations are merely theoretical, and may or may not be correct. The fact remains, that the earth has undergone, within the limit of geological investigations, various important changes of climate, that have reacted on life, such as are exemplified in the Mentonian amphitheatre, and that these changes have not been limited to the warm tertiary and cold glacial periods. Mr. Page, in his most interesting work on "The Past and Present Life of the Globe," p. 188, states his belief that similar warm and cold cycles must have existed during the earlier periods of the earth's existence. If he is right, he has discovered the existence of a law which must have repeatedly changed the

earth and its inhabitants, and which it may be presumed is destined again to change it, in the ordinary course of nature.

The water which falls on the Mentone mountains, in finding its way to the sea, has excavated deep ravines, which expose the structure of the tertiary rocks. It has thus formed numerous narrow valleys, by which access is obtained to the higher mountains, and to three or four small picturesque villages therein built. These ravines constitute, as we shall see, an important feature in the sanitary history of Mentone. Owing to the backbone of the district, as it were, being limestone, the water is everywhere very hard, and the springs considered the purest are loaded with lime. Treated with oxalic acid, the water gives a most abundant precipitate, even when taken from springs in the sandstone rocks. I have had to meet this difficulty by giving distilled water, or rain water, or mild mineral waters, to invalids. In some instances the hardness of the water is evidently beneficial, as, for instance, in cases of chronic diarrhœa.

In the unstratified limestone rocks at the Pont St. Louis are many crevices and caverns, similar to those which so frequently occur in the harder limestone rocks in general. These fissures and caverns owe their existence to various causes. Formed under water, and during their upheaval and drying subjected to pressure and heat, the limestone rocks have a tendency to split and to contract, and thus to form crevices and cavities. The presence of these fissures and caverns is often the evident result of the dissolving action of water on the soluble limestone rock, and of the infiltrations of subterranean springs or of rivers in days gone by. The formation of these caverns on a large scale is illustrated in the limestone strata of Derbyshire, of Carinthia, and of Kentucky. The Mammoth Cave of Kentucky, the caverns of Adelsberg, in Carinthia, and the Devil's Cave, in Derbyshire, are cited amongst the wonders of the world.

On the shore, at the eastern extremity of the inner bay, in the "red rocks," as they are called, are several good-sized caves, which contain in great abundance organic

remains—the bones of large and small mammifers—imbedded in hard sand and calcareous matter. The organic remains thus imbedded cover the floor to a depth of many feet, and are mixed with the flint weapons and utensils and knives, which have excited so much attention during the last few years; testifying as they do to the existence of races of men in far back pre-historic times.

The existence of flint weapons among the bones found in the Mentone caverns was first noticed, I believe, in 1858 by M. Forel, a Swiss geologist. He published, in 1860, a memoir,* in which he gives the result of his researches. M. Forel's investigations were principally made in the third and fourth caves, counting from Mentone. He found a great quantity of broken bones, shells, remains of crustaceæ, and pieces of charcoal. Along with these he discovered many fragments and splinters of flint, and also many arrow and lance heads, spear points, and triangular pieces of flint, evidently intended for knives. The bones belonged to stags, sheep, boars, horses, wolves, dogs, cats, rabbits, a large carnivorous animal, and one to the Bos primigenius, a large bull which belongs to the glacial period.

During the winter of 1862 Mr. Moggridge continued these researches, with great care, in the second cavern, and among great masses of bones also found the flint instruments above enumerated, some of them in a perfect state. Pieces of charcoal were likewise found mixed with them.

The existence of these bone caves at Mentone, along with the geological features of the district, draws attention to one of the most interesting and difficult geological questions of the day. These flint instruments were evidently made by men, and by men to whom the first dawn of human civilization was unknown, who were living as savages now live in Australia. They knew how to make fires, as the pieces of charcoal show. They lived evidently in the caves, and destroyed the animals, the bones of which form the floor, by means of the flint weapons, feeding on their flesh. The question is, when did they live?

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* "Notice sur les Instruments en Silex et les Ossements trouvés dans les Cavernes à Menton." Moyes. 1860.

THE BONE CAVES.

These bone caves have been found all over the world, and, latterly, in many, as at Mentone, the bones of animals have been found mixed with flint instruments. That the latter have been made by the hand of man appears rationally undeniable, and the first conclusion was that these savage men must have lived in the early historic periods; for the Celts and early Gauls used flint and stone weapons and utensils.

A minute investigation of the facts, however, soon proved that such could not be the case. Firstly, these cave flint utensils are quite different to those used by the Celts and the early tribes of the Old and New World. Secondly, they have been found in some of the caves mixed up with the bones of animals existing long before the present era, in geological epochs before, during, and after the glacial period.

Thus, in a cavern at Kirkdale, in Yorkshire, have been found the teeth of two or three hundred hyenas. In this, and in that of Brixham, in Devonshire, and in other similar caverns, have been also found in abundance the remains of other races either totally extinct or extinct in these climates, such as the Tiger, the Bear, the Mammoth, the Tichorrhine Rhinoceros, the Hippopotamus, and the Irish Elk. These are races that existed in the warm pleiocene epoch, when the climate of Europe was subtropical, before the subsidence of continents and the formation of the glaciers that gave rise to the boulder and gravel drift above described.

These races appear to have been gradually or suddenly destroyed, or driven south by the glacial change. I say suddenly, for in some parts of the world the change seems to have been very abrupt. A Mammoth, in the flesh, was dug out of the frozen shores of the Lena, in the north of Asia, some few years ago. Its actual flesh was eaten by dogs, after having been thus preserved probably for tens of thousands of years, and the skeleton and hair adorn the Museum of St. Petersburg. The skeletons of Irish Elks have been found in the same regions, buried in the frozen soil, erect, with their head thrown back, as it they had been suddenly overpowered, suffocated by a snow storm, and overwhelmed with mud and drift. The skeletons of

Mammoths are found in such quantities, preserved in the frozen soil of the north of Asia, that for centuries there has been a brisk trade in the ivory of which their tusks are formed.

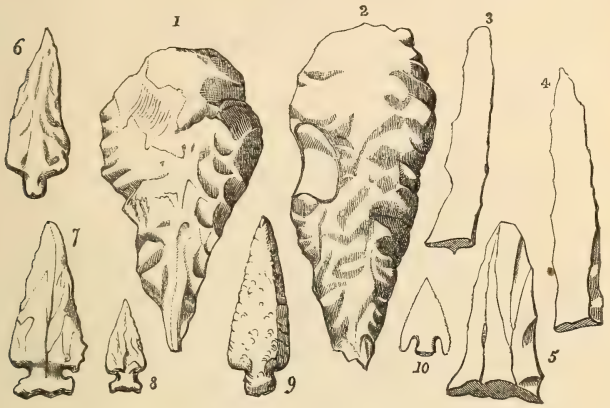
If the silex weapons and utensils had only been found along with the bones of extinct animals in caves, doubts might have been raised as to their showing the trace of early races of men who lived when those animals lived, chased and destroyed them. They might have been left in those caves by men who inhabited them at a later period. But there is other evidence.

They have been found together in the open, in beds of gravel and drift, the geological antiquity and date of which are denied by no geologist. Indeed, it is in such a bed at Amiens that the bones of extinct animals and flint weapons—the trace of man—were first discovered, by M. Boucher de Perthès, in the year 1840. His first statements were met with indifference, if not disbelief; but the most thorough and conscientious examination of the facts he announced, on the part of all the leading geologists of the day, both English and continental, has latterly led to their acceptance and confirmation.

If men in a savage state existed before and during the glacial period, along with races of animals long extinct, and if these were the men who made the various flint weapons and utensils found in the Mentone caves, the presumption is that the traces of habitation which these caves present belong to this far distant period of the earth's history. The St. Louis limestone rocks, in which the caves exist, long covered by the sea, were probably raised from its bosom in time to witness all the changes that preceded and followed the glacial period, and the caves themselves may have been inhabited before the conglomerate of Roccabruna was formed.

In order to clear up the geological history of the Mentone cave deposits, a museum has been formed in the town hall of Mentone, where the bones and flint utensils found in them by geologists are to be collected for investigation, along with all other specimens pertaining to the natural history of the district. Future inquirers, in their research

for flint weapons and utensils, will find the accompanying woodcut valuable. It is reproduced from Mr. Page's work, already quoted.



PRE-HISTORIC FLINT INSTRUMENTS.

1, 2, from Valley of Somme; 3, 4, 5, England; 6, 7, 8, Canada; 9, 10, Scandinavia.

Having said so much on the presumed pre-historic race of men, I must not leave the subject, new, perhaps, to many, without remarking, that these investigations have been accepted by many of the most eminent geological divines. It is felt, humbly, that what is true cannot be contrary to Scripture, although we may not be able *now* to see the link, the concordance, and that geology may continue its researches into the past history of the earth, and even of the human race, without fear or scruple. The concordance will most assuredly come. I would also add that up to the present time there has been no discovery of human bones under such circumstances as to prevent doubt or cavil, although several presumed discoveries have been brought forward. This is, at present, one of the difficulties of the question. Scientific men, however, are on the look-out, and expect from day to day to discover them. We

may, therefore, join in the search at Mentone, and perhaps find the solution to this mystery, so anxiously desired.

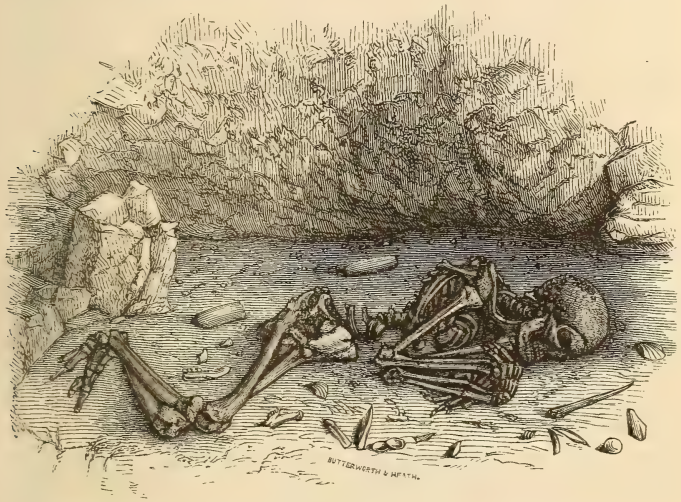
The above paragraph appeared in the second edition of this work in 1862. It was a kind of prophecy. In March, 1872, M. Rivière, a distinguished French geologist, discovered a well-preserved skeleton, belonging, it is generally considered, to pre-historic times.

M. Rivière had been working for several winters at the Mentone caves under the auspices of the French Government, and had found bones and instruments of bone and silex, but no human remains. He would never, in all probability, have found the fossil man had it not been for an accidental circumstance.

In passing along the coast the railway to Genoa goes through a deep cutting at the base of the red rocks, in front of the bone caverns. This cutting is about twenty-one feet deep, in front of the fourth cavern. M. Rivière had, as he thought, exhausted this cavern in his previous arduous researches, and had given up all idea of pursuing them. The cutting, however, revealed deeper treasures, so he set to work with renewed vigour. He had been excavating three months, passing the soil raised through a sieve, and had reached a depth of about nineteen feet below the surface, when he came upon the skeleton.

I carefully examined it the 29th of March, three days after the first discovery, when it was still two-thirds embedded in the compact soil of the cave, along with Professor Hughes Bennett, of Edinburgh, and the late Dr. John Martin, of Portsmouth, an eminent dentist. M. Rivière was obliged to scrape and separate the soil from the skeleton with the utmost care. This labour took him above a week, so anxious was he to do no injury to the bones. The skeleton, that of a man above six feet in height, was in a recumbent, semi-curved state, as in sleep or repose. Death must have come suddenly during sleep, or quietly during repose. There had evidently been a rude kind of inhumation, for there were some large stones behind and round the head, and on and around the skeleton was found a metallic powder, apparently iron. The calcareous earth of these

rocks contains a considerable amount of iron, so much so that a fracture soon reddens by oxidation of the iron. The iron had evidently helped to preserve and fossilize the skeleton. Still the body clearly lay where it had died, and in the attitude in which death had overtaken it, under the shelter of the cavern, the feet towards its recesses, the head to the entrance.



FROM A PHOTOGRAPH OF THE FOSSIL MAN LYING AS FOUND IN THE MENTONE CAVE.

The skeleton is that of a tall man, all but perfect, having no resemblance whatever to that of the orang-outang or of any monkey. The skull is elongated, very convex superiorly, dolicephalic; teeth all present in the upper maxillary, which was entirely seen. The lower maxillary was only half exposed, but the teeth in that half were all perfect. The molars were worn flat, as if, said Dr. Martin, by the trituration of hard food. The orbital cavities were very peculiar, different in their length and diameter from those in any known race of men, and rather similar to those of the skull

No. 1 found at Cro-Magnon, in Perigord, in 1868. M. Rivière thinks this peculiarity alone may imply a prehistoric lost type of man. The only means by which we can possibly determine the period at which this fossil man existed, is the study of the fossils and instruments found above, around, and below the skeleton. In M. Rivière's published memoir (Baillière, Paris, 1873) he gives separately the list of the fauna found in the twenty-one feet of soil above the skeleton, and the list of the fauna found immediately in contact with the skeleton, around, and immediately below. The two lists are as follows :—

FAUNA OF THE CAVE SOIL ABOVE THE FOSSIL MAN.

Carnivora.—Ursus spelæus, Ursus arctos, Hyæna spelæa, Felis spelæa, Canis lupus, Erinaceus Europæus.

Pachyderms.—Rhinoceros, Equus caballus, Sus scrofa.

Rodentia.—Lepus cuniculus.

Ruminantia.—Bos primigenius, Cervus alces, C. elephus, C. canadensis, C. corsicanus (?), C. capreolus, Capra primigenia, Antelope rupicapra.

Mollusca.—The shells of mollusca were very numerous, and the mollusca that inhabited them no doubt served as food for the men who lived in the cave. Some of these shells were entire, some were broken. Some were perforated, and were probably used for personal ornament. The mollusca were both marine and terrestrial.

FAUNA FOUND IMMEDIATELY ABOVE, AROUND, AND BELOW THE SKELETON.

Hyæna spelæa, Felis spelæa, F. antiqua, F. lynx, F. catus, Ursus spelæus, U. arctos, Canis lupus, C. vulpes, Rhinoceros tichorhinus, Equus caballus, Sus scrofa, Lepus cuniculus, Bos primigenius, Cervus alces, C. elephus, Capra primigenia.

The instruments found by M. Rivière in this cavern were in bone, in deer-horn, or in stone, or in silex from the chalk formation which exists in the neighbourhood. Those in bone and horn were arrows, pointed instruments, needles, and instruments apparently destined to flatten the threads

of sewn skins. Among them was one that appears to have been a commander's baton or staff. The stone and silex instruments were found by the thousand, if fragments and scales are to be counted. Most were well preserved, and many entire. The commonest forms were scrapers. They were made of silex from the chalk, or of agate. They were roughly worked, and appear to belong to the oldest-known stone period, the one in which instruments in bone are rare and those in stone much more numerous.

The skull of the skeleton was ornamented by Mediterranean shells, the Nassa or Cyclonassa neritea. There were also on it twenty-two canine teeth of the Cervus. At the side of the head was a poniard, or javelin, made out of the radius of a deer. Behind the head were two triangular blades in silex.

M. Rivière has shown great reserve in his memoir as to his opinion respecting the geological period in which his fossil man lived. At p. 38, however, he says: "Among the various animals that I have enumerated, four more especially, which I had already found at a higher elevation in the same cavern, by their presence alone, near the skeleton—the great *Felis*, or *Felis spelæ*, the *Ursus spelæus*, the *Hyæna spelæa*, the *Rhinoceros*—prove the great antiquity of the Baoussé Roussé Man. I therefore think that I am warranted in considering him a contemporary of the extinct animal species, as belonging to the paleolithic epoch."

M. Rivière has recently discovered another human adult skeleton, below the first, but not in such good preservation; as also that of a child. Both present the same characteristics as to skull and general conformation as the first, and evidently belong to the same race.

In Sir Charles Lyell's work, "The Geological Evidences of the Antiquity of Man," 4th edition, 1873, the discovery of this skeleton is described, p. 144-5. Sir Charles concludes in the following words:—". . . from the manner in which his remains were associated with unpolished implements and the bones of extinct animals, it seems not improbable that M. Rivière has brought to light a complete human skeleton of Paleolithic age." In the Preface,

page vii., he says . . . "I have also given a description of a skeleton found by M. Rivière in a cave at Mentone, which, from the unpolished implements and extinct animals associated with it, I am inclined to consider as of Paleolithic age. Since the sheets were printed, a second skeleton has been brought to light by M. Rivière in a neighbouring cavern under similar conditions. He informs me in a letter (April 17, 1873) that he found with this second human fossil a flint lance and flint hatchet, both polished. . . . Extinct animals were found also at a higher level than this second skeleton, but I infer from letters received from Mr. Charles Moore, now at Mentone, that the time of inhumation of these remains of elephants, rhinoceros, and cave bears, in subaerial breccias at different altitudes in the cliffs, will have to be critically ascertained before their geological bearing on the age of the human skeletons can be finally settled."

It will be seen by the above that Mr. Charles Moore doubts the Paleolithic (or unpolished stone) age of the skeletons, and thinks they may belong only to the neolithic or polished stone period, whereas Sir Charles Lyell appears to lean to their Paleolithic character.

AGRICULTURAL GEOLOGY.

As we have seen, several of the lower or secondary hills enclosed in the amphitheatre are formed of a loose sandstone. With this exception the soil may be said to be principally of limestone formation, with here and there aluminous clays. The agricultural geology of the district is, consequently, exceedingly interesting, offering much to observe in a very limited area.

The clay strata, in their natural unworked state, appear, as elsewhere in Italy, very sterile. The sides of the deep ravines worn in them by mountain torrents present little natural vegetation; as may be seen in the upper part of the Gorbio valley, and to the east of the mountain village of Castellare. Where, however, the fall is not precipitous, and especially where terraces have been formed, and the soil has been worked and manured, the clay strata appear to become very productive. This is easily explained, as

clays contain the potash, lime, and other salts necessary for vegetation, and everywhere merely require cultivation and irrigation to become fertile.

The sandstone hills are more naturally fertile than the clays, to their own peculiar vegetation—Conifers, Heaths, and Brooms—but do not offer the same resources to cultivation. The soil being principally silicious, and containing in very small proportion the salts and mineral constituents required for cereals and the vegetation of good land, it does not appear to become so easily fertile under cultivation. Still, with the help of terraces, irrigation, and manuring, it seems to respond to the wants of the evergreen Olive, Lemon, and Orange-trees, especially where the sand joins the limestone, and there is a mixture of both.

The green sand, where it appears, gives as usual a most productive soil, as for instance high up in the Cabrole valley, north of St^{a}. Agnese.

The hard stratified limestone which constitutes the Mentonian basin, and of which the higher range of hills is mainly, if not entirely, composed, by its decomposition forms a very fertile soil. Indeed, the gradual disintegration of this hard marble-like rock admirably illustrates the formation of soils in the early period of the earth's creation. Like limestones in general it contains, locked up in its all but adamantine structure, most of the mineral elements necessary for vegetation, including iron. The presence of iron is at once apparent from the red hue of the more perpendicular rocks. When a fracture occurs, the fracture is at first white, but from exposure to the air the iron passes to the state of the red peroxide, in which state it is well known, if not too abundant, to greatly increase the fertility of soils. Hence the red hue of the rocks which bound the inner bay near the Pont St. Louis, and of the soil generally, formed by the detritus of these rocks.

At the foot and on the sides of these limestone rocks are vast masses of stones and detritus that have fallen from the cliffs adjoining, broken off by the combined action of moisture, sun, and wind. These gradually crumble where they lie, yielding up their mineral constituents, and forming a suitable nidus for seeds sown either by the hand of

Nature or by that of man. If the lemon or olive is planted in such soil, it grows at once vigorously and healthily. If vegetables and cereals are sown, they appear to be equally at home. The numerous terraces recently constructed on the side of the mountain, and at the foot of the cliffs near the St. Louis ravine, and the self-sown plants growing naturally in the same region, illustrate these facts. Thus, no doubt, was the soil of the habitable globe formed when its mountains first reared their heads above the waves.

From what precedes, it will be at once understood that the vegetation of the Mentonian amphitheatre, except that of the sand hills, is what may be termed a lime vegetation. In other words, the plants that thrive the best are principally those that flourish in a calcareous soil, in districts in which lime is a component part of the soil.

Thus ivy grows freely in the ravines, and on the walls, where there is moisture. Pellitory, essentially a lime plant, grows out of every wall and terrace. Wallflower, Virginian Stock, and Pink and Carnation grow and bloom most luxuriantly in the gardens, with little or no cultivation. They form large bushes in the winter, and are one huge mass of luxuriant blossom very early in spring. There is a small wild Pink, a native, which grows out of crevices in the driest and most sunburnt rocks. The Odoaster rubrum, or red Valerian, grows wild everywhere, throwing out thick succulent stems and large spikes of flower from mere crevices in the dry sunburnt rock.

To these may be added, as examples of lime-plants, the Arum Arisarum, the Fumitory, the Cneorum tricoccum, and the Crassulaceæ or Stonecrops. The Fumitory is the commonest wild plant. It grows and flowers everywhere on the terraces throughout the winter. The Arum Arisarum is equally prolific and universal. Its dull purple flower covers the olive terraces, and attracts immediate attention after the autumn rains. I am told that the root is good food for pigs, but it is deep below the surface, consequently of rather difficult extraction, and appears not to be thought worth digging up. Moreover, pigs do not seem to be much

esteemed, or their society cultivated in the Mentonian district.

The Cneorum tricoccum is a rather elegant, small-sized bushy plant, with small dark-green leaves, small yellow flowers, and trilobed seed, which is only found in the wildest, rockiest, and driest regions; in such localities, for instance, as the rocks above the St. Louis Bridge, where it grows freely. It belongs to the Terebinthaceæ, chiefly a tropical order, and is in flower all winter; although usually three petalled and three seeded, it is occasionally four petalled and four seeded. Along with it, because found in the same localities, must be named a very lovely shrubby malvaceous plant, the Lavatera, with delicate pinky-white "mallow" flowers. It blossoms very freely all winter in the above localities, and always attracts the attention of the stranger who leaves the shore and the terraces to climb the rocky heights.

The Stonecrops are very abundant on the walls, in the warmest and driest regions, generally growing out of their interstices. They flower in April.

Nor must I forget to mention, as adorning these rocky regions, Rue, Rosemary, and wild Thyme. The two latter grow freely and abundantly, flowering all winter. We can thus, throughout the winter, in December and January, murmur *sotto voce*,—

"I know a *rock* whereon the wild thyme grows."

Another aromatic labiate, found abundantly, is Mint; but its habitat is different. It must be looked for in lanes and damp ravines, in moist localities.

The soil suits the Vine, which flourishes in all such mountain regions with a southern exposure, on the Mediterranean shores. It is principally cultivated on terraces, at from 500 to 2000 feet above the sea level, and formerly very good wine was made in the district, some of which may still be had. For many years, however, the oïdium reigned with the same savage intensity as at Madeira, and no wine whatever was produced. No doubt the evil might have been remedied by procuring sound

cuttings from the neighbourhood of Aix, where the disease has never appeared, and by sulphuring assiduously. But the Mentonian agriculturists had not sufficient energy or enterprise to adopt this course. They succumbed to what they thought the will of God, considering it, I am told, impious to strive against the disease. To me their inaction was more likely the result of that apathy and disinclination to adopt new-fangled ways that characterizes the agricultural mind, in all countries. Latterly Vines have been planted, and before long we may hope to see good wine again produced at Mentone. The presence of strangers has created a ready market, and no doubt an effort will be made to supply their wants.

During the winter the Vines are without leaves, and, being like old ropes when trailed, Italian fashion, from tree to tree, add nothing to the beauty of the scene. The Peach and Almond-trees are equally devoid of foliage, and therefore shine by their absence. They blossom, however, in February, and then become ornamental; they are more numerous in the vicinity of the higher mountain villages than near the shore.

Fruit-trees of all kinds seem to find the sea-level too warm, and are principally cultivated at a much greater elevation, such as the vicinity of the Turbia, or of St^{a}. Agnese, above 2000 feet high. Here Vines, Apple, Pear, Cherry, Peach, and Almond-trees abound, covering the terraces, and taking the place of the Olive-tree. The winter frosts are severe at this elevation, for I have repeatedly seen ice an inch thick. This degree of winter cold seems, indeed, to suit their constitution better than the mild winter climate of the seashore region.

CHAPTER III.

PHYSICAL GEOGRAPHY AND METEOROLOGY OF THE RIVIERA AND OF MENTONE.

The characteristics of the Mentone winter climate are, "Absence of frost, prevalence of northerly winds, moderate dryness of the atmosphere, complete absence of fog, paucity of rainy days, clearness and blueness of sky, general heat and brilliancy of sun, cool night temperature, a bracing coolness of the atmosphere generally, and a mean difference of 12° 8′. Fahr. only between the day maximum and the night minimum."—(p. 81.)

Careful observation, during fifteen winters, of the meteorological conditions which reign on the Genoese Riviera, and at Mentone, has gradually led me to form a clear idea of their nature and of their influence over the climate.

As we have seen, the Mentonian district, which has been the principal seat of my observation and study, is a small amphitheatre, situated on the coast-line or undercliff of the mountains of southern Europe, as they reach the Mediterranean. To the north-east, north, and north-west, are the highest mountain chains of Europe, extending hundreds of miles (see Maps, Gulf of Genoa and of Mediterranean). Further still to the north-east lies the table-land of Europe, which reaches to the arctic regions. As a necessary result of this geographical position, the northern winds, especially the north and north-east, must be very dry winds. Firstly, they have been dried by travelling over a great continent. Secondly, they have had nearly all the remaining moisture wrung out of them by the extreme cold of the high regions which they have to pass over when crossing the Alpine chains, before they reach the Mediterranean.

The physical evidences of the extreme dryness of the atmosphere, when northerly winds reign, are manifold.

Firstly, with a north and north-east wind, there is generally a difference of from nine to twelve degrees Fahr. between the wet and dry-bulb thermometers. With the north-west, which crosses lower mountain chains, and may come from the North Atlantic, the difference is generally from five to eight or nine degrees. Secondly, the atmosphere is usually clear, the sky blue, the sun shines warmly, the nights are comparatively cold, and the summits of mountains, above four thousand feet high, are free from clouds.

These phenomena are easily explained on meteorological grounds. The presence of moisture in the air, either as imperceptible vapour or as cloud, gives a white appearance to the sky, and veils the earth from the sun's rays. It thus becomes a kind of shield, a protection from the warmth of the sun. When moisture scarcely exists, and the air is dry, as in the Mediterranean basin with a north wind, in Egypt, in the desert of Sahara with south winds, indeed in all dry regions, the sky is always blue, the sun shines with great power, and at night, owing to rapid radiation of the earth's heat into space, the air becomes, comparatively, cold. Such is the climate of the north Mediterranean coast with northerly winds. The sky is clear and blue, the sun shines like a globe of fire, which it really is, and its rays reach the earth with great power. The nights are then clear, the stars shine with a brightness unknown in the north, and the temperature of the air is cold, compared with what it is in the daytime.

The English climate is partly explained by the above facts. The atmosphere above the British Isles is always loaded with aqueous vapour, which gives to the sky its usual whitish colour. The aqueous vapour of the atmosphere shields the earth from the action of the sun's rays during day, and prevents radiation during night. Hence the coolness of our summer, as compared with that of the same Continental latitudes, where this aqueous shield is wanting. In winter, when the sun is low on the horizon and its rays are feeble, the cloud atmosphere, by preventing radiation, keeps in the heat previously acquired, and contributes, with the Gulf stream, to render the British winter

milder than that of the drier Continental regions in the same parallel of latitude.

The influence of these meteorological conditions on climate has been well explained, of late, by Professor Tyndall in his lectures on heat. It is also beautifully illustrated by the meteorological observations of Mr. Glaisher, during his aeronautic ascensions. Once above the aqueous vapour and the clouds, which extend several thousand feet high in our climate, a dry atmospheric region is reached, where the sky appears intensely blue. The sun's rays here have so much power that they scorch and blister the face and hands, although the thermometer may be much below the freezing point.

The Mediterranean climate, when the north winds blow, is like this upper region of our own atmosphere. The air, containing but little moisture if these north winds reign, as they do during the greater part of the winter, the sky is blue, and the sun shines through it fiercely, even in mid-winter. It thus warms directly all the objects with which it comes in contact, and by reflection everything, for some distance from the cliffs or mountains.

The north-west wind, called the mistral in this part of the Mediterranean, blows from the centre and south of France as a cold, dry, cutting wind, which is much dreaded. There are many explanations and theories as to its origin, but I think that there is no doubt as to its being a wind originating in the mountainous region of France that extends from Switzerland to the western Pyrenees, including the Dauphiny Alps, the Puy de Dome, and the Cevennes. Cold air rushes down from these regions to the Mediterranean basin to take the place of the rarefied warm air that ascends. One of the great climate advantages of Mentone is its complete protection from this wind by the Turbia mountain, which separates it from Nice. When the mistral blows, the sky remains blue, and the sun shines warmly. Sometimes, however, the north-west wind blows no longer as a local wind, originating in the south of France, but as a grand north-west European wind, coming from the North seas and North-west Atlantic. Then it brings black clouds loaded with rain, which may fall in

the district, or out at sea, and the difference between the wet and the dry bulb thermometers diminishes.

Thus when rain does fall, with a north-west wind, the cause is generally a grand oceanic and European north-westerly storm; but such rain is rare. It is still more so with the strictly continental winds, the north-east, and east. Indeed, when rain falls at Mentone with any such winds, it is generally at the end of a European gale from these regions, covering all Europe with snow and ice, of which the newspapers bring us the details a few days later. Such rain becomes snow on the higher elevations of the mountains that surround and enclose Mentone.

Even with a direct south-east wind, snow may fall, exceptionally, inside the Mentone amphitheatre, owing to its being open to the south-east in a line with the high mountains of Corsica, which lie directly south-east, and are then covered with snow. Snow, with a south-easterly wind, generally falls in the latter part of the winter, in March for instance, when immense masses of snow have accumulated on the Corsican mountains. Before this accumulation has taken place, in early winter, the south-east wind is a warm wind, the scirocco.

Thus, during winter there is very little rain from the northern quarters; and as, during the winter months, from November to May, the wind is generally from these quarters, the dry, clear, sunny, but cool winter climate of Mentone is explained. The exceptional winter warmth, for the latitude, depends on mountain protection, and on other causes, which will be presently examined and explained, not on latitude.

When rain falls, with the wind steadily in these northern quarters, it is gentle, moderate in quantity, never presenting the tropical character of furious downpour.

When the northerly winds bring clouds and scud over the mountains, and the atmosphere in the Mentonian amphitheatre and out at sea is warm, these clouds often melt gradually, and disappear. It is a very interesting sight o see thick banks of clouds thus rising over the summits of the higher mountains in the background, generally from the north-west, expanding on the sky above, and

then melting away as they advance southwards, into warmer atmospheric strata. After a time, however, if the wind which impels them is powerful, they cool the air, accumulate, and the entire sky becomes overcast.

With south-westerly and south-easterly winds, the fall of rain at Mentone, and on the Riviera in general, is often very great in a limited space of time—indeed, quite tropical. This is also sometimes the case when northerly winds meet southerly currents on or near the coast line, and condense their moisture. The rainfall may in either case amount to five or six inches in the twenty-four hours.

Whenever this occurs, the watercourses are filled, from bank to bank, with enormous volumes of water, which carry down great masses of stone like straws from the mountains, and excavate wide beds as they approach the shore line. These watercourses are, at other times, as in central and southern Italy, mere rivers of stones, with a thin stream of water trickling through the middle. On one night, Dec. 1859, four and a half inches fell in ten hours. The greatest amount of rain that was known to have fallen in twenty-four hours at Greenwich, in five years, was 2·63 inches (Drew).

The smallest rills become impetuous torrents when the rain falls with this tropical violence. As they rush madly to the sea, their yellow waters, like those of the "flavus Tiber" of the old Latin poets, carry down vast quantities of stones and earth, washed from the mountain sides, and discolour the waves for some distance from the shore. The descent of these earth and stone-laden waters into the sea illustrates, on a small scale, the way in which the deltas at the mouth of large rivers, such as the Nile, the Ganges, the Mississippi, have been and are being created. It also illustrates the mode of formation in past geological eras of the Neptunian or sedimentary strata. The earth contained in solution and thrown into the sea, gradually subsides and sinks to the bottom, there forming horizontal layers, the composition and nature of which depend on the kind of soil carried away from the land by the river or torrent. As these deposits take place, numerous animated beings, especially those that cannot get away very fast from the

mud-shower, such as crustaceæ, become entombed, to constitute the fossils of future ages.

These heavy rains, as we have seen, are all but confined to the southerly winds, or to their collision with northerly winds, on the shore mountains, or near the shore. Coming from the warm south, the southerly winds are warm, and, in passing over the Atlantic and the Mediterranean, absorb large quantities of moisture. On arriving at the mountain-girt coast of the Riviera, they are arrested by cold currents from the north, or have to ascend the sides of the mountain ranges. In either case, in winter, they come in contact with cooler atmospheric strata, and are obliged to part with their moisture, which forms dense clouds and is rapidly precipitated in the shape of heavy rain.

The total rainfall during my first winter's residence at Mentone, 1859–60, was 23·68 in., from October 9th to April 21st; viz., October, 8·02 in.; November, 2·21 in.; December, 6·96 in.; January, 3·24 in.; February, ·18 in.; March, 1·26 in.; April, 1·81 in. These data were given me by a friend who kept an accurate register. According to my own observations, it rained in that winter, in November five days, in December five, in January four, in February one, in March six, and in April, up to the 23rd, eight days; in all, twenty-nine days, from November 3rd until April 23rd. In October it rained nearly every day.

The heaviest and most continuous rain always occurs with a south-westerly equatorial wind. Coming from the Atlantic, and having traversed a great extent of the Mediterranean, from Gibraltar to the Gulf of Genoa, this south-westerly wind impinges on the shore in successive blasts laden with moisture, which is precipitated in immense quantities as in the tropics. It is also with these gales that are seen the heaviest seas.

It very often rains on the mountains, or a few miles out at sea, when it is quite clear and fine on and near the sea-shore. In the former case, the wind is generally a southern wind, and, as it ascends the mountain, it evidently meets with colder strata of air, which precipitate its moisture, forming rain clouds. I have repeatedly sat on the mountain-side and watched a current of warm air rise from the

sea, at a distance, form at first a vapour on the shore, and then a white cloud, gradually ascending the mountain. It is singular to see the small cloud thus spring, as it were, from the waves near the coast-line, gradually expanding and enlarging as it creeps up the mountain-side. I was, indeed, forcibly reminded of the fisherman in the Arabian tale, who opens a casket on the sea-shore, from which the geni issues in the form of a thin vapour, which rapidly becomes a cloud, covering the horizon.

A more reverent and more striking illustration of this phenomenon is to be found in the history of the prophet Elijah, in sacred writ (1 Kings, chap. xviii.), "And he said to his servant, Go up now, look towards the sea . . . . and it came to pass at the seventh time, that he said, Behold, there ariseth a little cloud out of the sea, like a man's hand. And he said, Go up, say unto Ahab, Prepare thy chariot, and get thee down, that the rain stop thee not. And it came to pass in the meanwhile, that the heaven was black with clouds and wind, and there was a great rain."

The rain, in these instances, is often confined to the upper mountains, and increases the volume of torrents and rivulets, although it may remain quite fine at and around Mentone, as also on the sea horizon.

When, on the contrary, it rains a few miles out at sea, whilst there is fine dry weather at Mentone, the wind generally comes from the contrary direction, from the north. The cold north wind, passing overhead, impinges upon the sea some distance from the shore, meeting warmer atmospheric strata. Dark banks of clouds thus form on the horizon and rain falls several miles from the coast. In either case the coast ledge may, and often does, enjoy a happy immunity.

The average fall of rain at Nice is 25 inches. I presume that the annual fall at Mentone is greater, from its being surrounded by mountains on all sides but the south, the south-east, and south-west. According to Roubaudi, the author of a valuable work on the climate of Nice, the average number of rainy days at Nice is sixty. M. de Brea, a native and resident of Mentone, and a gentleman of high scientific attainments, has published a meteorolo-

gical table, founded on ten years' observation, from 1851 to 1861. According to his experience, the average number of days or nights during which it rained little or much at Mentone is 80, or 20 more than at Nice. We may presume, therefore, that the fall of rain is greater, although the consequence is not necessary. At Greenwich, the average rainfall is only 25 inches, yet the number of rainy days is 155. At Torquay, the average number of rainy days is also 155. At Pau, the average rainfall is 43 inches; rainy days, 119. At Malaga, the number of rainy days is only 40 (Francis). At Madeira, the rainfall is variable; the average about 30 inches, the rainy days 88 (Dr. White).

The principal rainfall takes place at the autumn and spring equinoxes. In autumn the sun is descending towards the equator, and drags the south-westerly winds with him. The north wind takes advantage of the opportunity of the weakening of its adversary's forces, and gives battle. From the collision follow tears in the shape of rain, thunder, and lightning, nature's artillery. The result is then always the same, the north wind is victorious, drives the south wind towards the tropics on the trace of its general, the sun, and winter is established. At the spring equinox all is reversed. It is the north wind that is in possession, and the south wind that, advancing with its general, the sun, from the equator towards the north, gives battle. Once more torrents of rain fall, once more thunder and lightning announce the fierce contest of the elements. This time, however, it is the constantly reinforced battalions from the south that are victorious, the north wind is driven back, and summer is once more established.

This explanation, although more poetical than scientific, of the equinoxes and of the cause of the heavy rains that then fall, is strictly correct. These rains are the result of a contest between the north and south winds, in connexion with the sun's path, descending to and ascending from the equator.

The amount of rain that falls does not so much characterize the climate of a locality as the manner in which it

falls. At Mentone, as at Nice, and along the entire Riviera, thoroughly cloudy days, and days of incessant rain, are rare. They do, however, occur occasionally in the winter, principally at the autumn and spring equinoxes, and generally with continued southerly winds. The sky is then quite obscured, so that the sun is not seen, as in the north, and rain may fall for several days and nights. But this does not usually take place more than two or three times in the course of the winter. Many inches of rain fall on these occasions, thoroughly soaking the ground. After two or three days, the clouds disperse, the sun shines forth, and again careers through a clear blue sky, like a blazing fire. In a few hours the ground becomes dry, and many days of uninterrupted sunshine generally follow, during which out-door life goes on as during a fine rainless September with us.

There are, thus, two rainy seasons on the Riviera: the autumnal equinox, at the latter end of September, and during October, and the vernal equinox, in March, ending with the first week of April. The autumnal rainy season is rather irregular in its periodicity. It usually occurs under the influence of south-westerly gales, and extends, more or less, into November. The rains do not last, in most winters, more than three or four weeks, and that not continuously. The rest of the winter, until the spring, is generally dry and fine, under the influence of the northerly winds, with the exception of a few occasional days of rain, when the wind turns to southern quarters. Heavy rain again falls in the latter half of March, with south-westerly or south-easterly gales and storms, as in northern Europe. These rains saturate the earth and renew the springs; under their fostering influence, and with the help of the ardent sun, which shines through the clear dry atmosphere, vegetation then advances with surprising rapidity.

As in England, and in most other regions, the seasons, and more especially the winter, vary in different years, so that it is difficult to form a correct opinion from the experience of any one year. There are winters during

which south-westerly winds prevail, often clouding the sky and bringing rain, at intervals, throughout the winter. Such were the winters of 1864–65 and of 1868–69.

During the summer but little or no rain falls. In some years the drought lasts, without cessation, for six or seven months, from April or May to October or November. Thence the absolute necessity of tanks for the irrigation of the lemon and orange-trees, which, as we have stated, cannot thrive and bear fruit without irrigation during the dry season.

The exceptional dryness of the summer along the Riviera, in the south of France, in Spain, and in the Mediterranean generally, is explained by the fact that this great inland sea lies on the northern limit of that part of the earth's surface to which, in physical geography, is given the name of "the rainless tract." The highest expression of this region is the desert of Sahara, which continues those of Arabia and Central Asia. The principal cause of their existence is, no doubt, the passage of north-easterly winds over Asia and southern Europe during the entire year, either as upper or surface currents. These winds, passing over continents and great chains of mountains, gradually lose their moisture, until they have but little to bestow on the regions they reach in the more advanced stage of their progress, and the latter consequently become dry regions or deserts, for want of rain.

The winds that course over the earth's surface may be divided into two principal currents. The one, from the poles to the equator; the other, a return current from the equator to the poles. Owing to the earth's diurnal motion of rotation, the wind from the poles to the equator takes a slanting easterly direction; that from the equator to the poles, a westerly one. Thus, in the northern hemisphere the wind from the pole to the equator is a north-east wind; that from the equator to the pole a south-westerly one. From the tropic of Cancer, or from about latitude 30°, to the equatorial region, the north-east wind is always a surface wind, and constitutes the north-east trade. From the pole to the tropic the systemic north-east wind is either an upper current or a surface one, according to seasons and other influences.

The presence of high mountain chains in the south of Europe, and the rarefaction of the atmosphere by sun-heat in the great Mediterranean basin, both contribute to bring the upper north-easterly systemic wind to the lower atmospheric regions, and to make it a surface wind during a great portion of the year in the Mediterranean region. The south-westerly, or passage return winds, which are all but constant in the North Atlantic Ocean, consequently reach the shores of Europe, to the north of the Mediterranean level, during the greater part of the year. They bring moisture and rain with them, and thence the very rainy climate of Brittany, Normandy, and of the south and west coast of England. In winter the trade winds, following the declension of the sun towards the equator, descend south; these south-west winds replace them, and thus descend to the most southern latitudes of Europe. The presence of these south-westerly winds at lower latitudes as winter approaches seems to be the principal cause of the autumnal rains in the south of France, Spain, and in the Mediterranean basin generally.

Maury, in his interesting work on the "Physical Geography of the Seas," attributes the existence of the "rainless tract" in Asia and Europe to the influence of the Andes or Cordilleras of South America.

According to this view, the south-east trade winds of the southern hemisphere, after sweeping the wide surface of the Atlantic, and becoming perfectly saturated with moisture, reach the continent of South America below the equator; they cross it, and meet the huge mountain barrier of the Andes, ascending its eastern sides to an enormous elevation, varying from fourteen to twenty thousand feet. The extreme coldness of the upper regions of the Andes leads to the precipitation of the moisture which the winds contain—squeezes it out of them. Thence the origin of the immense rivers which descend from the eastern slopes of these mountains, such as the Amazon and the Orinoco, two of the largest rivers in the world.

These moist south-easterly Atlantic trades, after thus precipitating their moisture, become dry winds. In the equatorial calms they cross the north-east trades, ascend to the upper regions of the atmosphere, and then direct their

course to the north-east, as an upper south-west current. Recrossing the South American continent, they reach the Atlantic, and cross it, still as an *upper* south-west current, for the north-easterly trades occupy the surface of the Atlantic between the 30th degree of latitude and the equatorial calms. Above the northern limit of the trades they again become *surface* winds, and constitute the south-westerly or passage winds of North Africa and of Europe. Reaching the north-western coast of Africa, still as dry winds—for, as we have seen, they have passed the Atlantic as a dry upper current to the north-eastern trades—they have no moisture to give to a level surface, and thence, according to this theory, the desert of Sahara, and, in summer, the dryness of southern Europe.

The fact of the Mediterranean south-westerly wind in summer being a dry South American south-west wind which has passed over the Atlantic as an upper current to the north-east trades, is proved, according to Maury, by a very singular natural fact. Occasionally, from time immemorial, a kind of red dust settles on the decks and sails of vessels in the Mediterranean and on its islands and shores. Submitted recently to microscopic examination, it has been discovered that this dust, which was supposed to come from the African deserts, is composed of the microscopic shells of infusoria which inhabit the Brazils, the dried summer beds of the tributaries of the Amazon and Orinoco. The furious south-westerly dry wind of these regions evidently raises them up as impalpable dust, wafts them across the Atlantic as an upper current to the north-east trade, and finally deposits them in summer on the Cape Verde Islands and Mediterranean Sea, on Sicily, on Malta, and on the Grecian Archipelago. Maury looks upon this fact as conclusive evidence of the crossing of the south-easterly and north-easterly trades in the calm regions of the equator, and of their return to the north and south poles as south-westerly and north-westerly winds. In winter, as the northern limit of the trade-winds is lower, these upper currents descend at a lower latitude in the Atlantic, and reach the Mediterranean, not as dry winds, but as moist water-laden south-westerly winds.

During the fifteen winters that I have passed at Mentone, living in the eastern bay, I have never seen a fog, either at sea or land, day or night, morning or evening, except on one occasion early in May. This fact is the more remarkable, as on my first visit to Corsica, in the month of April, 1862, for several days there was a sea-fog all round the island. It rose to about thirty feet above the sea or shore, the weather being beautiful and sunny, and I was told by passengers on board the steamer from Marseilles to Ajaccio that it extended from one port to the other. The following explanation given me by my late friend Professor Rogers I believe to be the true one:—

Whenever the air comes from the land it is from the north, and in this region it is so very dry that it absorbs all the moisture it can possibly obtain from the sea, however low its temperature, without forming vapour or fog. Whenever, on the contrary, the air comes from the south or seawards, both it and the land it reaches are so warm that its capacity for the absorption of vapour is sufficient to enable it to continue to retain it until it has reached a considerable elevation. It does not, therefore, part with moisture, in the form of fog or cloud, until it has ascended the mountains to a considerable height.

When the lowest clouds are several thousand feet higher than their summit, the atmospheric dryness must be very great. In the upper regions of the sky, above the mountains, are often seen slight fleecy masses of cirrus, torn and twisted by aerial currents, which reflect in the most beautiful manner the bright light of the southern day. Still more beautiful are the dense masses of cumulus cloud which are frequently seen hanging over the high mountains of Corsica, on the south-eastern horizon, anchored, as it were, to their summits. Towards sunset they are often tinged with glorious hues reflected from the west. The brilliancy of these clouds, floating in the upper regions of a serene, clear atmosphere, often several miles above the earth, is partly owing to their being composed of snow. Once the region of eternal snow is reached,—in this latitude about eight thousand feet high,—the clouds themselves become congealed, and float in the air as masses of downy snow.

Generally speaking the sky is clear, and the sun shines in the heavens like a globe of fire. Even on cloudy days the sun is often seen, and its power felt. So powerful are its rays when the sky is clear that even in December or January it is disagreeable to walk without the lined parasol, so generally carried in the East. The use of these parasols is not confined to ladies, few gentlemen braving the sun without them. They are a positive want, and those who object to their use at first get headache, and are sure to adopt them before long. Those who have lived in tropical climates often assume the peculiar headgear used in India as a protection against the sun.

Sunshine is quite different in the south of Europe to what it is in England and the north-west of Europe. In our climate the air, even in summer, is filled with watery vapour, which, as we have seen, gives a whitish hue to the sky in July or August, and mitigates the power of the sun's rays. In the Mediterranean region it is otherwise. In fine weather, winter or summer, the sky is of a hard blue, and objects at a distance of many miles are seen clearly and distinctly, without any of that haze which forms so peculiar a feature in an English landscape. Immediately behind the house where I reside rises a mountain, the Berceau, the higher peak of which is 3850 feet high. It is generally, throughout the winter, perfectly free from clouds, and seems so near that nothing but absolute barometrical measurement convinced me of its real height; the summit does not appear to the eye to be more than 2500 feet above the sea level at the very utmost. Indeed, this mountain, as well as its neighbours and companions, may be considered first-rate hygrometers. The position of the clouds above its peaks, or on its flanks, indicates in the most unmistakeable manner the degree of dryness of the atmosphere. If we calculate 1° of difference between the wet and dry bulb thermometer for each 300 feet of elevation from the sea level, free from cloud, there must be above 13° of dryness in the upper atmospheric strata for this mountain to be entirely free from clouds and mist.

The great dryness of the atmosphere is proved by another interesting meteorological phenomenon. Even when the

wind is in the south, and rain is falling in torrents, there is often a considerable difference between the wet and dry bulb thermometer (from three to four or five degrees). The rain appears to be formed in the upper atmospheric regions, and to fall through the air without saturating it, as occurs in northern climates. When such is the case there is not that feeling of dampness usually experienced when rain falls in the north, and chest invalids are not oppressed as in moister climates.

There are thus many influences that combine to render the atmosphere dry in winter: the prevalence of northerly winds, the great power of the sun, the freedom from fog, the small number of rainy days, and the dry, rocky character of the soil. This dryness of the air is illustrated by the fact that wet linen dries, out of the sun, in a short time, at any period of the winter, except when it rains or the sky is obscured. Throughout the winter it is possible to sit out of doors for many hours at a time, and for many days together, in sunny sheltered spots. This I am in the habit of doing myself, every winter, in leisure hours. I merely choose a spot sheltered from the wind, at the foot of a wall, rock, or Olive-tree, and exposed to the sun, from which it is, however, generally necessary to be protected by a lined parasol. Without this precaution the position would often be quite untenable. A thermometer in such a situation, in the shade, generally marks from 60° to 64°. At the lounger's feet, and around, are always insects, attracted in rocky places by the masses of wild thyme, and by other flowers.

There is a great charm in thus reading and musing for hours, especially with agreeable companions, seated on the ground in some lovely, sunny, picturesque nook, such, for instance, as the western coast of the Cap Martin, or the warm terraces of the eastern bay. Nothing is more invigorating or refreshing to the invalid. Indeed, this lazarone enjoyment in midwinter of sunshine, air, and scenery is much more beneficial for invalids and aged persons than long tiring walks.

Whilst speaking of insects I must mention that one of the charms of the climate is that, notwithstanding the

warmth and sunshine of the days, there is an all but complete immunity out of doors from all venomous insects, gnats, or mosquitoes during the winter, after the first cold nights in December. Mosquitoes, however, may be kept alive artificially all winter by the rooms being maintained at a high temperature. If they are fed at night, and thus kept warm in the day, they may live on indefinitely. This immunity is owing to the general coolness of the night temperature. Previous to the first cold nights in November or December, in the autumn, the mosquitoes are very troublesome, owing to the beds being generally furnished with curtains which are no protection whatever. They are usually open, and of too close a material for it not to be insufferably close when they are brought together. It is quite worth an invalid's while to have regular net mosquito curtains, such as are used in India, made on arrival. Once they have disappeared, the mosquitoes do not reappear until summer.

According to M. de Brea's statistics, omitting the fractions, the annual number of fine days in which the sun shines without clouds is 214; the number of days in which the sun shines with clouds is 45; and the number of days in which the sun is not seen, the sky being completely obscured, without rain, is 24. To which we may add—days of rain, 80, many in part sunshiny.

The rainy days principally occur, as we have seen, between the months of October and May; whilst in summer, there is sometimes not a drop of rain for months together. The winds can then blow from the south without their vapour being condensed into clouds and rain on the mountain summits which skirt the coast. The mountains are themselves heated with the powerful rays of the summer sun, and the warm sea-borne winds meet currents still warmer than themselves. Even in winter a very gentle south wind from the sea may not bring cloud and rain. All its superabundant moisture may be at once taken up, owing to the great dryness of the colder mountain atmosphere.

Notwithstanding the mildness and sunny brightness of the weather, yet it is still decidedly winter at Mentone from December to April.

The nights are chilly during four months—from December to April—the thermometer generally falling to between 46° and 54°, with south winds, and with north winds to between 40° and 45°, sometimes below 40°. In the daytime it is generally cool in the shade, and out of the shade when the sun is obscured by clouds. The ordinary "shade maximum" varies from 50° to 56° when the sun shines, and is lower still when it does not. The temperature always falls as soon as the sun disappears or sets, and often at once reaches the minimum of the twenty-four hours, owing, no doubt, to a cool down draught from the mountains. The heat is evidently produced by the direct influence of the sun. In a south room, whenever the sun is on the room, the window can be left wide open, and, without a fire, the thermometer will generally remain at about 64°; but when the sun disappears the window has to be partly shut, and chilly persons require a wood fire. In midday the north rooms on the same floor are, even when the sun shines, four, six, or eight degrees colder than the south. Even before sunset, as soon as the sun disappears behind the mountains, there is a difference of six or eight degrees in the temperature of the atmosphere if northerly winds prevail. When the sun is permanently obscured by clouds the air often feels chilly, even with a south wind, and the complaints against the weather are loud and numerous.

These complaints seem partly to have their origin in the extreme depression which appears to attack the entire community, but more especially the invalids, when it is thus cloudy and wet, and when the sun is obscured. I have both observed this depression and painfully experienced it myself. In such weather most of us are indescribably wretched and miserable. Then, indeed, we feel vividly that we are poor invalids, exiles from home, stranded on the shores of the stream of life. But with the return of bright sunshiny weather, all these gloomy thoughts disappear. Once more we are gay and cheerful, inclined, indeed, to look on our ill-health as in some respects a positive advantage. Is it not the cause of our being able to avoid the dreary winter of our northern cloud-girt island? Is it not to our ill-health that we owe the

temporary freedom from the cares and duties of real life—the real schoolboy's holiday we enjoy?

It is a general source of remark, and often of complaint, that the air feels cooler than the thermometer would lead one to suppose the temperature to be, and this remark is not without foundation. Owing to the general dryness of the air, evaporation takes place very rapidly from the skin, absorbs heat, and produces a sensation of coldness. It is this same feeling that is experienced when the face or hands are bathed with eau-de-Cologne. The rapid evaporation of the spirit causes rapid abstraction of caloric, and thus occasions the sensation of cold. It is by the same physical law that the water is cooled which is contained in the porous jars, so much used in Spain and in warm climates in general. The moisture that exudes on the external surface is evaporated by the atmosphere, abstracts heat, and cools the water inside. In a dry atmosphere like that of the Riviera, human beings are mere "porous jars," and are cooled down, like the water the latter contain, by rapid evaporation. This fact, and its physical interpretation, account for the absolute necessity of very warm clothing, and for the appearance of the rheumatic pains which often follow the neglect of this precaution.

The Mentone vegetation shows the influence of a powerful sun warming a chilly atmosphere. Deciduous trees lose their leaves in December, as soon as the nights become cold, and do not regain them until April, when they are becoming warmer. The green, forest-like appearance of the hills and valleys, in midwinter, is owing entirely to the evergreen Olive, Orange, Lemon, and Pine-trees. The few deciduous trees are mere dry sticks until April. On the other hand, in sheltered situations exposed to the south, the heat of the sun during the day so warms the soil, that it has not time to cool at night. These situations thus become regular forcing-beds, producing, as I have stated, Violets in December, Anemones in January, and all our spring flowers early in February. In shady situations, where the sun does not penetrate, the ground-vegetation remains torpid, like the deciduous trees, till March. As, however, the sun-exposed localities are very numerous on

the sheltered lower hills, and in protected valleys, away from the sea, the ground-vegetation is all the winter very luxuriant and abundant, offering great resources to the botanist and florist. Indeed in the warmer valleys the only winter is on the thoroughly rainy days.

From what precedes, it will be perceived that the characteristics of the climate of Mentone and of the Riviera, as evidenced during the fifteen winters I have spent there, are: absence of frost, prevalence of northerly winds, moderate dryness of the atmosphere, complete absence of fog, paucity of rainy days, clearness and blueness of sky, general heat and brilliancy of sun, a cool night temperature, a bracing coolness of the atmosphere, and a mean difference of 12° 8′ Fahr. only between the day maximum and the night minimum. Even when the sun is obscured and rain falls, as the wind is then generally from the south-west or the south-east, it is not cold, at any period of the winter. On the rare occasions, however, when it rains, with the wind from a northern quarter, there may be as miserable and chilly a state of things as in a drizzling November day in England. As rain only falls on a small number of days in winter, and then often not during the whole day, and as the other days are all but uniformly bright, clear, and sunny, for five days out of six, exercise in the open air can be prudently taken, from nine until three, four, or five, according to the season, with both pleasure and benefit.

Notwithstanding the complete protection from the north, north-east, and north-west, the wind is often rather high near the shore. Even when really in the northern quarters it may seem to come from south-east or south-west, the open region, no doubt owing to the land-locked character of the district. Still, however strong the northern winds may be, the mountain valleys and the more internal hills are quite sheltered and protected. The smaller or eastern bay is decidedly better protected from the north winds, and is several degrees warmer than the western, owing to a spur from the Berceau mountain rising immediately behind the houses which line the shore. There certainly is no atmospheric stagnation at Mentone, as some

writers have very erroneously asserted. On the contrary, there is constant atmospheric motion between sea, land, and mountain.

According to Admiral Smyth, in his very interesting work on "The Mediterranean"* (p. 233), the most prevalent winds in that sea are those that blow from west round northwards to north-east, during two-thirds of the year, from May to February. During the months of February, March, and April, on the contrary, the south-east and south-west winds would prevail. My experience of the Mentonian shore during winter only partially agrees with this statement. In October and the early part of November, after the autumnal equinox, south-west winds have appeared to me to prevail, bringing the heavy autumnal rains. Then the north winds gain the upper hand, and usually, but with occasional temporary exceptions, reign until the spring months, March and April. At this epoch, the south-westerly and easterly winds again seem to have the ascendancy, giving rise to the gales and rains of March. The prevalence of northerly winds during the winter months, in most years, is the real key to the climate, as I have already stated. During the four cold winter months, November, December, January, and February, the high mountain barrier protects the amphitheatre from these northerly winds. During the early spring, in March and April, the prevalent southerly winds, to which it is quite open and exposed, bring genial warmth and fostering showers.

The southerly winds, to which Mentone is fully open, whether they bring rain or not, are generally mild, if not warm. The south-east, or scirocco, the plague of southern Italy, all but loses its languor-creating, pernicious character, in autumn and spring, by the time it strikes the head of the Gulf of Genoa. Originating in the African deserts, it leaves the African shores as a hot, dry, scorching wind, imbibing abundant moisture as it crosses the Mediterranean. Wherever it reaches the shores of southern

* "The Mediterranean: a Memoir, Physical, Historical, and Nautical." By Rear-Admiral W. H. Smyth. Parker. 1854.

Italy it is impressed with this double character, heat and moisture, and is much dreaded. When it arrives at Mentone, however, it has passed over the Apennines and the high granitic range of Corsica, some of the summits of which are clothed with eternal snow. It has thus become much cooler than in the south or centre of Italy. Indeed, in the months of February and March, the scirocco is so cooled by the great mass of snow on the Corsican mountains that it may reach Mentone, as already stated, as a cold wind, bringing cold rain, and sometimes snow into the amphitheatre. The only occasions on which I have known snow fall inside the amphitheatre, down to the sea level, have been under its influence.

There is geological evidence that in times past the desert of Sahara was covered with water, which was probably one of the reasons why the Alpine glaciers descended into the plains of Lombardy, for then this south-east wind or scirocco would not present its present characteristics. When this inland sea dried up, and the present desert of Sahara was formed, the hot scirocco wind must have appeared, and have much contributed to the melting of the glaciers of North Italy. M. Lesseps, the hero of the Isthmus of Suez canal, has recently proposed to again turn the desert, or part of it, into a sea, by making a short canal from the Gulf of Cabes or little Syrtis, below Tunis. It is certain that south of the Atlas mountains a large extent of the desert is below the level of the Mediterranean, and that the plan is feasible, but the results might be most disastrous to the climate of Europe.

On reading Admiral Smyth's work I have been struck with the remarkable agreement between my observations on the winds, and on their influence over weather and climate in the western Mediterranean, and the results of the observations of the ancient Greeks, made at Athens more than two thousand years ago. There is still extant at Athens a kind of observatory tower, erected by the astronomical architect Andronicus Cyrrhesthes, which has survived the wear and tear, the storms and catastrophes of twenty centuries, for it was probably built about one hundred and fifty years B.C. This tower is octangular in form, and gives the eight points of the compass then re-

cognised, with the reputed quality of the winds in the meridian of Attica, by symbolic statues. I saw it a few years ago just as he describes it.

In addition to the polar, equatorial, and local winds, very often, when it is fine, and when the sun shines with force on the Mentonian amphitheatre, there is a very decided sea-breeze during the middle of the day, as in tropical countries. The air, becoming heated and rarefied in the mountain basin, rises, and cooler air from the sea rushes in to supply its place. But for a decided sea-breeze thus to rise in winter, there must be a strong wind blowing from some of the northern quarters. When this is the case, in the early part of the day, until about eleven o'clock, the north wind only reaching the sea at some distance from the beach, owing to the mountain protection, leaves the waters inshore calm or nearly so. The sea air that later rushes in to supply the place of the rarefied land air, pushing angry billows before it, is merely the north wind, which having passed overhead and gone out to sea, is pulled back by the midday heat. When the air is perfectly calm in the upper and lower atmospheric regions, the calm of the early morning continues all day, because there is then no strong wind and angry sea to be drawn inland by the effects of land heat. The latter in winter is not sufficiently great to create this little monsoon when the atmosphere is in a state of complete repose. It was long before the above facts became clear to me, before I understood why, on two days apparently identical as regards sunshine, the morning calm on one occasion continues all day, and on another gives place, about eleven o'clock, to a strong sea-breeze and to a rough sea.

In winter, the sea-breeze reigns from about eleven to three. In summer it begins much earlier—before eight. Thus, the seashore of Mentone is decidedly windy, even in fine summer weather, and this sea-breeze is often cold in winter, for it is the north wind, which has passed overhead, drawn back. This is a fact that invalids ought to remember. They should bear in mind that the gentle breeze that fans them when sitting on the sea-beach on a fine sunny day, may be merely a cruel, treacherous north

wind pulled back by the heat, and to be carefully avoided. This return sea-breeze can, moreover, be completely avoided by leaving the shore and gaining the numerous valleys. We must recollect, at the same time, that wind is a health-giving agent, a purifier of the earth, that a place where there is no wind would soon become a mere carbon-loaded well, perfectly pestilential, especially in a southern climate. It is only detrimental to confirmed invalids, and they can easily avoid it at Mentone, without remaining indoors, unless on the rare occasions when a hurricane is blowing.

The sea-breeze, which daily pours into the Mentonian amphitheatre when the dry north winds blow, having imbibed moisture from its contact with the sea, modifies, diminishes the extreme dryness of these northerly winds, an important fact for the invalid population. Thus, unless when there is a positive hurricane from the north, the dryness is never extreme. The wet-bulb thermometer shows this influence. On these days the dryness generally diminishes a couple of degrees by midday, showing that the atmosphere has become so much the moister.

At night there is a land-breeze, which descends from the mountains to the shore and sea. Between the subsiding of the night land-breeze and the rising of the day sea-breeze, and again between the subsiding of the day-breeze and the rising of the night land-breeze—in fine, bright sunshiny weather—there is a period of repose, a lull, during which the air is calm. The present Italian mariners call this period of calm *bonaccia*, as being unaccompanied by danger; their more sturdy Roman predecessors designated it *malaccia*, from its being a cause of disagreeable detention. This period lasts, in winter, from eight to eleven A.M., and from three to six or seven, P.M., according to the length of the day and the amount of sunshine. The morning lull is the time for confirmed invalids to walk on the shore. Those who are well—the strong, the healthy—can receive no harm whatever from a good blow, if well clothed, and not heated by violent exercise.

The land-breeze from the mountains, at night, is usually very gentle, especially in winter. Occasionally, however, owing to sudden change of temperature between land and

sea, the land winds descend suddenly and with great impetuosity, as in all parts of the Mediterranean skirted with high mountains. Thence the general use of "lateen or triangular sails, attached to yards that can instantly be let down by the run, for the xebecs, feluccas, and other craft which coast the shores within their influence."

It is only at night that the land-breeze descends from the high mountain ranges. It is quite perceptible, even in winter, as soon as the sun has set, especially in the western bay. The greater warmth of the eastern bay at Mentone is evidently due to the protection of the secondary range of hills, which, rising immediately from the sea, cuts off, as it were, this cold air current. In the western bay the lower valley of Gorbio is similarly protected by the sandstone hill of St^{a}. Lucia. Consequently the temperature of this valley is also exceptionally warm, as evidenced by its early and luxuriant vegetation. Wherever there is a gully, ravine, or torrent bed, the temperature is generally two or three degrees lower in it at night than elsewhere in either bay, owing to their forming funnels down which the colder mountain currents descend to the sea.

In summer the cold mountain currents at night powerfully contribute to diminish heat, and, combined with the day sea-breeze, produce a much cooler and more equable temperature than is found inland in the same latitudes.

Thus the temperature is very seldom above 80° Fah. at any time in the summer, whereas both in Paris and in London a higher temperature is reached every summer. On the other hand, during several months, June, July, August, and September, there is but one or two degrees difference between the day maximum and the night minimum, which constitutes the real drawback to the summer climate, especially for invalids.

The difficulty of recognising from which direction the wind blows is very great at Mentone when there is a calm in the lower atmosphere, or when northern currents from the north-east or north-west are diverted to the south-east or south-west by the mountains which form the bay. When this is the case, and also under the influence of the sea breeze, all the weathercocks will point to the south, when,

in reality, the weather and climate-influencing wind comes from the north. All my early observations were invalidated by the non-recognition of these facts, and I think most of those that have been published have been invalidated by the same cause. Very often it is only by consulting the wet and dry bulb thermometers that doubts can be solved as to the real direction of the wind. They are of great assistance, for north winds are always dry, and south winds moist.

The apparent twisting and turning of a north-east wind to the south-east as it enters the bay, of a north-west to the south-west, and the frequent sea-breeze, give to the wind the appearance of nearly always coming from the south. This error, a most palpable one, has, I believe, been made by most observers. There are, in reality, many eddies and local currents in the Mentonian amphitheatre which are insignificant as regards weather and climate. It is the upper currents alone that rule the weather and the climate, and they can only be ascertained by a careful examination and study of the position and progress of the clouds in connexion with the highest mountain summits. The local weathercocks are all but useless for this purpose.

A remarkable fact which renders it all the more difficult to decide which way the wind blows is, that constantly two winds are observed blowing at the same time from different quarters of the horizon, from the north and from the south, and that even in fine weather. Indeed, the Genoese Riviera is a regular battlefield, where the north and the south winds constantly meet in mortal combat, the weather depending on which has the victory.

The climate of the Mentone amphitheatre and of the Riviera in general is a favourable specimen of what botanists call the warmer temperate zone. Plants live nearly everywhere which frost kills, many annuals in a colder region become perennials, and many forms of vegetation new to the more northern flora make their appearance. It is the Mediterranean climate, but that of the more favoured Mediterranean regions. In Italy, for instance, the most protected southern regions must be reached to find the same immunity from frost. On the southern shores of the Medi-

terranean, in Algeria, and at Tunis, there is the same immunity from frost, but, owing to the presence of the Atlas mountains, cool rains predominate throughout the winter, with the north winds, which usually rule at that time of the year. Mentone also is warmer, more protected from northern winds than its neighbour Nice, more so than Cannes, although the general features of the climate are the same, for all three are only a short distance apart. It is the question of fruit walls in orchards in the same district, one higher and giving more protection than the others, but all turned towards the south. At Nice there are sheltered situations, such as the Cimiez, the Carabacel, and Villefranche, in which the protection is greater than in the town itself, and which thus assimilate to Mentone, without, however, equalling it.

It is well to recollect that in such a climate, in the warmer temperate zone, winter is by no means avoided. The descriptions of the winter climate of Nice, Cannes, Hyères, and of Italy in general, contained in most books of travel, works on climate, and guide-books, are mere poetical delusions. The perpetual spring, the eternal summer, the warm southern balmy atmosphere, described to the reader in such glowing terms, only exist in the imagination of the writers. Although there is so much sunshine, so much fine weather, such immunity from fog and drizzling rain, we are still on the continent of Europe, with ice and snow behind us, for more than two thousand miles, up to the north pole. It is still winter; wind, rain, a chilly atmosphere, and occasional cold weather, with snow on the mountains and flakes of ice in exposed situations, have to be encountered. It is as well, therefore, that the invalid traveller should be prepared to encounter them, otherwise, anticipating an Eldorado, balmy zephyrs, perpetual sunshine, and an ever-smiling nature, he is disappointed. I believe that continuous warm weather in winter, and the complete absence of cold days or nights, are not to be met with in the temperate zones, only in tropical regions; and these regions present many drawbacks both to health and comfort. If they are considered requisite, however, the tropics, or at least Madeira, should be selected, not the Mediterranean;

or better still, the invalid longing for summer, for constant fine warm weather, should at once go to the Antipodes, to Australia, or to the Cape.

The existence of Orange and Lemon-trees, of Geraniums, Heliotropes, Verbenas, and Roses, flowering throughout the winter, does not necessarily imply the absence of cold weather, merely the absence of absolute frost. This is well known to all who are familiar with the management of conservatories and of winter flower-gardens in England. Once the flowers, gathered from every clime, which make an English conservatory such a scene of glory in winter, are fully in blossom, and have been brought in from the forcing-houses, all gardeners know that a rather low temperature is beneficial, and prolongs the bloom and beauty of their floral favourites. The Chinese Primulas, the Heaths, the Epacrises, the Camellias, the Azaleas, the Correas, the Chorozemas, the bulbous plants, continue to expand and thrive at a night temperature of from 38° to 44°. It is the frost they fear.

A few miles from Mentone, at Bordighera, groves of Palm-trees grow in great luxuriance, and are looked upon by all travellers as evidences of an all but tropical climate, as are those that grow on the "Place" at Hyères, and in the gardens at Nice. Such, however, is not the case. Palms will grow as out-door trees in any region of the Riviera, and would be generally cultivated, were it not that their cultivation is unprofitable everywhere, except at Bordighera, which has the monopoly of supplying Rome with palms on Palm Sunday. On the Riviera they either do not produce fruit, or their fruit is not fit to eat; to ripen the fruit of the date Palm the sultry summer heat of the south-east coast of Spain, of Egypt, or of the desert of Sahara is required. Even in Egypt the Arabs place the dates in jars, which they bury in the sand to complete the process of ripening. This tree may be compared, when growing in southern Europe, to the Chestnut-tree in the north of England. As a tree the latter grows there in great luxuriance, but its fruit is all but worthless. The centre and the south of Europe alone have sufficient summer warmth to allow the fruit to reach perfection. The presence of magnificent Chestnut-trees in

our climate does not, therefore, indicate that it is a warm one. I have, indeed, seen Chestnut-trees in the Highlands of Scotland, as, for instance, at Arrochar, on Loch Long, growing with the greatest luxuriance.

The proximity of the sea exercises a considerable influence over the climate of Mentone, as the temperature of the Mediterranean is never very low. When the weather is cold, and especially when the sun is obscured, the sea is a reservoir of heat, and perceptibly warms the air; for it is then warmer on the sea-level than on the hills. When, on the contrary, as is usually the case, the sun shines, the evaporation which constantly takes place cools the air at the sea-level, and it becomes perceptibly warmer as the hills are ascended. There are sheltered sunny nooks in the vicinity of Castellare, a mountain village 1200 feet above the sea-level, where, owing, no doubt, to the concentration and reverberation of the sun's rays, the climate is exceptionally mild, and where violets and anemones appear at least ten days before they are found at much lower elevations, or even in sheltered spots at the sea-level.

The summer climate of Mentone is cool compared to that of southern France and of continental Italy, owing, as we have seen, to the sea-breeze which sets in regularly in the morning, and blows the greater part of the day, and to the land-breeze which descends at night from the higher mountains. But then, on the other hand, it remains, night and day, at a high temperature for several months. In the tropics, on the seacoast, there is also this sea-breeze daily, which makes the warm weather bearable, even agreeable to some; but it does not prevent the high temperature producing its usual physiological effects on the human frame. Warmth, when the air is stagnant and loaded with moisture, is very difficult to endure, because the insensible perspiration collects on the skin, and is not carried off. This renders warm weather so unpleasant in England, where the air is generally more or less saturated with moisture. When, on the contrary, there is a light breeze fanning the body, and the air is dry, as on the Mentone coast, the perspiration is constantly carried away, and the

body cooled by its vaporization. I have been for several days on the outskirts of the desert of Sahara, in Algeria, with the thermometer at 96°, without feeling any distress, although streaming with perspiration. It was merely because the scirocco was blowing on me from the desert and evaporating the moisture from the skin. Whilst once, on a Danube steamer, in the same temperature, the heat was all but unbearable unless I placed myself on the prow of the vessel and encountered the draft created by its movement. The trying feature of the summer climate in the Riviera is undoubtedly the high night temperature, which has to be borne constantly, during the summer, from May until October.

Thus Sincapore, under the equator, has a temperature of about 84° all the year through, variation being limited to two or three degrees. This heat is not extreme; it is much less than that of India in summer, but its continuance renders Sincapore anything but a healthy residence. It suffices to develop the diseases of hot climates.

Such being the case,—although persons in health may find it an agreeable residence,—I do not advise invalids to remain at Mentone during the summer season. If they do not wish to return to England, the best summer climate in Europe for health, they had better seek a refuge from the heat in some of the high mountain sanitaria to which the medical men of Nice, Geneva, and Switzerland send their patients. I may mention, as easily accessible, St. Dalmas, on the Maritime Alps, about six hours' distance from Mentone; the Grand Chartreuse, near Coni, in Piedmont; further away, the Grand Courmayeur, a well-sheltered and picturesque mountain valley, with sulphur springs, near Aosta, on the south side of the Mount St. Bernard, and Monte Generoso, above lakes Maggiore and Lugano. I have sought for such a refuge in Corsica, which the weekly steamers from Nice now render very accessible, but hitherto without any success. The cool summer climate exists there, but without the accommodation which would make it useful or available, as will be explained hereafter.

Many of the mountains that surround the Mentonian amphitheatre are above 4000 feet high, the Aiguille and

Gran Mondo for instance, and present lovely plateaux and Pine forests, and would offer a charming summer retreat, were Pension Hotels built upon them. My friend, Dr. Farina, of Mentone, is now engaged in an attempt to establish such a mountain station above Dolce Aqua in the valley of the Nervia, only a few hours' distant. It will be a great boon when the winter invalids have only to ascend the mountains that have protected them from the north winds in winter to find shelter from the summer heat of the south. Now these cool mountain heights are left to the shepherds.

In Switzerland there are many retreats of this kind, at different grades of elevation. Amongst the pleasantest and best, according to the late Dr. Bezancanet, of Aigle, are the baths of Morgins, in the Valais, above 4000 feet high, a charming mountain valley, well known for its strong chalybeate spring. I have not myself been there, but have been told that it is a delightful retreat from the heat of a continental summer, and that the air is bracing, without being chilly. The valley is wide, and the sky generally bright and clear. A respectable hotel has been built, which affords travellers and invalids the protection and comforts they require. I may also mention Sepey or Ormonds, about seven leagues from Vevay, 3300 feet high; and La Rossinière, a pretty mountain village, with a good hotel. Aigle, Bex, and Clarens can be recommended for early summer. The three latter are on the level of the Lake of Geneva, itself 1200 feet above the sea-level, so that the elevation is still considerable. In early summer and in the autumn they are better calculated for the invalid than the higher elevations, which are only suited for invalids during the great summer heats—from the middle of July to the end of August and the middle of September. At all these places there are comfortable hotels at reasonable rates.

In cases of phthisis, more especially, extreme heat should be avoided during the summer, as calculated to accelerate the progress of the disease. The patient should, indeed, be kept in a temperature below 70° Fah. This, in Continental Europe, can only be done by leaving the plains for the

mountains, and attaining thereon a considerable elevation —at least four thousand feet.

There is, however, some little risk to be encountered by those who thus fly to the mountains to escape the heat of the plains. If the summer is dry and fine, all is well; the mountain air is found pure and bracing, the scenery is enchanting, and health often improves rapidly. But if wet weather sets in, the mountain retreats are at once enveloped in cloud or fog, and may remain so for weeks, to the great detriment of the consumptive patient. Again, the latter is surrounded by healthy, enthusiastic tourists, eager to explore the majestic beauties of the Alpine scenery, which they have come to see and examine. Their example is contagious, and it is very difficult for the most reasonable not to be led away, and not to be induced to exert themselves more than is desirable or prudent.

I have known many break down from one or both of these causes, and under the influence of accidental disease, to lose completely in a few weeks all the benefit gained by a winter's residence on the Riviera. It is the recollection of such cases that makes me now always recommend the invalids whom I have carried safely through the winter to leave touring to better times, and to return if possible, for the summer, to cool, green, healthy England. If not possible or desirable, the summer may generally be spent more safely on the coast of the North Sea or of the British Channel, at any of the ports between Ostend and Trouville, than in Switzerland.

One of the best summer stations in Switzerland is, unquestionably, St. Moritz, in the upper part of the Engadin valley, on the river Inn, at an elevation of 5300 feet. St. Moritz has become a favourite summer resort of late years, and there is now plenty of hotel accommodation. The air is cool and pleasant throughout the summer. At this height, in case of rainy weather, the clouds often lie at a lower elevation, and the bad weather may be partially avoided. For thoroughly convalescent patients a residence in these Alpine regions in the months of July and August may be advantageous as well as agreeable. But it is not judicious or safe for those who are suffering from serious

chest disease to run the risk of possible cold, stormy weather, which at so great an elevation in the Swiss Alps sometimes occurs even in midsummer.

It has been proposed lately to send consumptive patients to the Engadin for the winter. I only look upon this proposal as an evidence of the reaction taking place in the medical mind against the treatment of phthisis by tropical warmth and moisture. The same reaction has occurred in the United States, where some physicians are sending patients to St. Paul, in Minnesota in winter, for the sake of a dry cold that freezes the rivers many feet deep! Thus the human mind, like the pendulum, has always a tendency to go to extremes, although truth and prudence say: safety lies in the middle course, "*In medio tutissimus ibis.*" This is the motto I have taken for my work on the treatment of pulmonary consumption, in which these climate questions are fully discussed.

CHAPTER IV.

FLOWERS AND HORTICULTURE ON THE RIVIERA.

"O fortunatos nimiùm, sua si bona nôrint
Agricolas!" . . .

VIRGIL.—*Georgics.*

"Si j'avais un arpent de sol, mont, val, ou plaine,
Avec un filet d'eau, torrent, source, ou ruisseau,
J'y planterais un arbre, olivier, saule, ou chêne;
J'y bâtirais un toit, chaume, tuile, ou roseau."

JOSEPHIN SOLARY.—*Rêves ambitieux.*

"Heureux qui doucement laisse couler sa vie,
Sans chercher les honneurs, sans exciter l'envie,
Dans les palais des grands, peu jaloux d'être admis,
Et parmi ses égaux sait choisir ses amis."

AUTHOR UNKNOWN.

How many there are among the busy workers of social life chained to town duties, cares, and occupations, living in an atmosphere of bricks and mortar, who have a secret passion for flowers and horticulture! Such was my case for many a year. This passion burst forth in early youth in an enthusiastic devotion to botany, which had to be surmounted and surrendered with a sigh for less fascinating but more important studies. If, later in life, invalidism has brought with it any solace, any compensation for a forced withdrawal from the active duties of an "excelsior" career, I have found it principally in "flowers," and in their cultivation. To a medical man the study of flowers and plants, of horticulture, has an exceptional and peculiar charm. It is merely continuing in the vegetable creation the professional study of life, of its functions and diseases. The field is a fresh one, but the main facts observed and studied are the same. Indeed, I may safely

say that the analysis of the phenomena of life in the vegetable world has much aggrandized and deepened my knowledge of the same phenomena in the human being. Many are the errors committed by learned physicians, which if committed by a gardener in his glasshouses would cost him his place in three months. His plant clients would fade and die, and he would be turned off as "incompetent." An old writer on gardening, whose name escapes me, quaintly remarks, that a flowering plant is like a very delicately organized human being. If treated with fostering care and attention it returns the labour and affection a hundredfold, and becomes a thing of beauty, producing lovely flowers to rejoice the heart of the friendly owner. But if neglected and abandoned, or treated with capricious tenderness, it fades, droops, and dies.

I have long had a garden in heather-clad, fir-covered Surrey, where summer flowers smile on me when I return from the South, but it is only a few years ago that the thought came to establish a garden on the sunny shores of the Riviera. At first I was satisfied with the luxuriant wild vegetation of winter in this region, with the sunshine, and with the natural beauties of the district. As I became more and more familiarized with my winter home, I began to grieve that the precious sunshine, light, and heat, that surrounded me should be turned to so little horticultural account. Nature in these southern regions is left pretty much to herself as regards flowers, and it is surprising what floricultural wonders she does produce unassisted. Then the desire came to see what I myself could do with the gardening lore previously acquired in England. So I purchased a few terraces, some naked rocks, and an old ruined tower, on the mountain side, near Mentone, some three hundred feet above the sea, with a south-westerly aspect, and sheltered from all northerly winds. Here, hanging as it were on the flank of the mountain, I set to work, assisted by an intelligent peasant from the neighbouring village of Grimaldi, whom I have raised to the dignity of head-gardener, and in whom I have succeeded in instilling quite a passion for horticulture. We think we have done wonders in the course of a few years only, and

MY ITALIAN GARDEN (ENTRANCE).

as the results obtained throw a considerable light on the winter climate of this part of the world, I shall briefly narrate them. I am encouraged to do so also by the reflection that should this work fall into the hands of others trying, like myself, to establish a winter garden in the south of Europe, my experience, slight as it yet is, may be of some avail.

I would firstly repeat that I think I have found out why horticulture is so utterly neglected in the south of Europe, and in warm countries generally. Mere ordinary gardening—the cultivation of common garden flowers—is attended with considerable expense, owing to the necessity of summer and even winter irrigation, if any degree of excellence, or if certain results, are to be obtained. In climates where, as on the Riviera, it does not rain from April until October, where the rain falls tropically, in cataracts, at the autumnal and vernal equinoxes, and where often in midwinter there are droughts of six weeks' duration under an ardent burning sun, frequent watering becomes indispensable for most garden plants. Thus additional labour is required, and a heavy expense entailed, in addition to that of the ordinary work of the garden.

On the other hand, southerners of the higher and middle classes are thrifty and economical in the extreme, have few outlets for activity, and are at the same time indolent. Those who have property usually live on one-fifth of their income, and put by the rest. They thus provide for their children, and yet can remain quiescent, taking life easily, and spending their days in an agreeable state of "dolce far niente." By such persons horticultural expenses are considered an extravagance, and those who indulge in them are thought to be all but demented. Should misfortune overtake them, and their financial circumstances become embarrassed, it is all attributed to the gardening. They understand paying labour for planting and irrigating Orange-trees, Cabbages, Peas, or Wheat, because there is a return—a profit on the transaction; but to spend good money on Roses and Jasmines, unless to make perfumes for sale, passes their comprehension. Thus my Mentone neighbours long thought, and perhaps still think, that I am

preparing for the erection of a large house, and nearly all the masons in the country have applied to me for my patronage. They cannot understand any one making a mere flower garden for pleasure on the mountain side, a mile or two from the town, so I am asked building prices for the all but worthless rocks around me, and find it difficult to extend my horticultural domain as I should wish.

The soil of the garden is the usual lime soil of the country, formed by the break up of the oolitic limestone rocks which form the skeleton of the district. Rich in the mineral elements required for vegetation, it is poor in *humus*, in the organic constituents, so that it requires manure to bring out its powers, which, with the addition of the latter, are considerable. The climate of Mentone is, as we have seen, a very peculiar one, and, although the preceding chapter contains a full account of its meteorological character, it may be as well to briefly recall the chief "horticultural" features.

From the beginning of April until the end of September, or the beginning of October, there is no rain at all, except an occasional thunder storm. When these storms occur, either in winter or summer, nothing can be grander, more sublime, than the scene as witnessed from my garden, or from any mountain height. They are quite tropical; the flashes of lightning illuminate the heavens, revealing every one of the mountain recesses, partly covered with dark clouds, and the thunder peals and reverberates from crag to crag, as if the skies were about to fall;—the sky is clear, the sun ardent, the light intense, the heat varies from 74° to 84°, and is nearly the same by day and by night. Between September and April about twenty-five inches of rain fall, the greater part about the autumnal and vernal equinoxes. From the middle of December to the middle of February the night minimum is about 44° Fah., the day minimum about 54°, in the shade. Two or three times in the winter the thermometer goes down for a night or two to 38°, 36°, 34°, or even to 30° in exposed situations, at the mouth of ravines and torrents, on the sea shore, but it never freezes in less exposed localities. These temperatures of mid-winter and mid-summer are reached by a gradual fall

of the thermometer in autumn as the days shorten, and by a gradual rise in spring as they increase in length. The entire region is protected by an amphitheatre or semicircle of mountains, some 4000 feet high, from north, north-west, and north-east winds. Thus the inhabitants, animal and vegetable, are like plates in a plate-warmer before a kitchen fire—*videlicet*, the sun ; or like fruit trees on a south wall. Such are the data on which the vegetation of the district is based ; long droughts with a high temperature in summer, all but tropical rains from the south-west or south-east in autumn and spring, dry sunny weather in winter, with, for two months, a night minimum temperature of about 44°, and no frosts.

Such climatic conditions are peculiarly suited, as already stated, to the Olive, the Lemon, and the Orange tree, which cover the hill sides, and constitute all but the sole agricultural produce. In the gardens, such as they are, mostly, if not entirely planted as adjuncts to the villas built for strangers, many flowers and plants will thrive and blossom, more or less, all winter, with scarcely any care. Thus the following grow luxuriantly, and most can stand the summer drought without irrigation :—Aloe, Cactaceæ in general, Mesembryanthemum, Iris, Maritime Squill, Cineraria maritima, Alyssum, Rosemary, Thyme, Wallflowers, Stocks, Carnations, Marguerite, Geranium, Pelargonium, Marigold, Arabis, Silene pendula, Primula (common and Chinese), Violets, Pansies, Nemophila; Hepatica, Roses, Chrysanthemum, Salvias of many kinds, Lavender, Mignonette, Fabriana imbricata, Justicia alba, Tobacco, red Valerian, Daphne, Spirea, Achillea, Veronica, Erica Mediterranea, Nasturtium, Habrothamnus elegans, Lantana, Abutilon, Datura Stramonium, Linum trigynum, Sparmannia Africana, Petunia, Cyclamen, Camellias, Azaleas, Calla Æthiopica, Richardia Æthiopica, Wigandia Caracasana, Bignonias, Begonias, Cineraria, Verbena, Cytisus, Cistus, many species of Passion flowers, Chorozema, and most Australian winter flowering Mimosæ and Acaciæ; spring bulbs—Crocus, Snowdrop, Hyacinth, Ranunculus, Narcissus, Ixia, Sparaxis. As stated, most of these plants can rest in the warm dry summer without being injured thereby. They

are all, or nearly all, perennial in this climate. They start into life with the autumn rains, flowering more or less early in the winter or spring, and most of them continue in full bloom from Christmas to April, a month which, horticulturally, corresponds to June in England.

Most winters, in England, paragraphs appear in the newspapers, from residents in the more favoured regions of our island, giving lists of the flowers still blooming in their gardens. It may be remarked, however, that these lists never appear after Christmas, or the end of December at the latest. The fact is that in England November and December are generally rainy, and not very cold months. Although the weather is very often damp, foggy, cool, unfavourable to human health, it seldom actually freezes so as to destroy vegetable life. The hard frosts of winter generally commence about Christmas or the week after, and then the autumn flowers are all destroyed to the ground, and no such floricultural pæans are possible.

On the Genoese Riviera, on the contrary, after Christmas, if there has been sufficient rain, vegetation takes a start and rapidly gains ground, under the influence, not so much of a high night temperature (for we feel the January cold of continental Europe), but of the increasing length of the day, and of the ardent light and sunshine of an unclouded sky.

The increased length of the day is scarcely sufficiently estimated in calculating the effect of temperature on vegetation. I was much struck by its action in England in the year 1867. The days were more than usually cold and rainy until August, and the thermometer at night often went down nearly to the freezing point, and yet vegetation progressed much as usual, each plant and flower coming to maturity at about the usual period. Evidently the increasing length of the day, and the decreasing length of the night, were favouring and advancing vegetation. Thus on the north shore of the Mediterranean, although in December and January the days are generally days of warm ardent sunshine, they are so short, say nine or ten hours only, compared to the cold nights of fourteen or fifteen hours, that vegetation receives a great check. During these

months the generality of flowering plants, although there is no frost and no cutting north winds, remain rather stationary, with some brilliant exceptions, only well formed buds opening out.

Most of the above-mentioned plants have been long tried in the gardens of this part of the world, and have been found adapted to the soil and climate. They survive the summer heat and drought, and require merely common care, with artificial irrigation in autumn, if the autumn rains fail, as they occasionally do, in order to thrive and flower in the open air.

I commenced my gardening with the already well-known plants, and soon secured flowers for every winter month in sufficient abundance to deceive the eye and to make winter look like summer, both in the open garden and in the drawing-room. Now I am trying to cultivate some of the flowers belonging to the lower latitudes of the southern hemisphere of Australia and South America, which bloom naturally in winter, and which we cultivate in winter conservatories, and have found that the winter heat is sufficient to flower many of them in the open air. Thus I have planted in the open air, in an artificial prepared soil, Chorozemas and Kennedyas, Ixias and Sparaxis, which have passed through the winter in good health, and have flowered freely. I have repeatedly tried Epacrises and Cape Heaths, thinking that they would thrive in such a climate, which must be very similar to that of Australia and of the Cape of Good Hope. They get through the winter very well, but wither and die in summer, more, I really believe, from want of proper shading and watering than because the climate is unsuitable. This seems, however, to be the general experience of horticulturists in the south, for they are not found in the catalogues of the leading houses at Marseilles and Nice, because, I was told, they did not answer. Thus I had to send for the plants I have tried from England.

On arriving at my Riviera garden the last week of October I am able to form a pretty correct idea of the manner in which the plants have stood the influence of the scorching heat of summer. Six months of blazing sunshine, which so heats the ground that if the peasants touch it barefoot

the soles of their feet are burnt, without clouds or rain, barring a very exceptional shower of half-an-hour's duration, are calculated to test the idiosyncrasy, the peculiar constitution, of any plants. The sheltered situation of the garden renders it peculiarly trying in summer, for it is in an angle of the limestone rock, south-east and west, and exposed to the full power of the sun all day long. My gardener rather quaintly tells me that in midsummer it is a furnace—"*C'est comme l'enfer, monsieur.*"

The plants that stand this sun heat and drought the best without any irrigation are the plants which are natives of the country, and which in it find their natural habitat, the conditions most favourable to their existence, such as Thyme, Rosemary, Cineraria maritima, sweet Alyssum, Lavatera, Iris, Scilla maritima, Juniper; also the Cactaceæ in general, the Aloe, the Mesembryanthemum. They still, after all this roasting, look perfectly well and flourishing. All these plants have very long fibrous roots, which insinuate themselves into the crevices of the rocks in the search for moisture, and probably find it. In this respect, however, the Geranium and the Pelargonium appear to rival them. It is positively marvellous how well they bear the heat and drought; they thrive in the rockiest, warmest, driest part of the garden, and at the end of the summer, when even Aloes are drooping for want of moisture, they are all right; they have merely lost the greater part of their leaves, and are ready to start into full luxuriance as soon as they are watered. My gardener tried an experiment one summer. He had several large Aloes, well established, and planted in the warmest regions, in a foot or two of soil only, in corners of the rocks. He left them entirely without water all summer, as also Geraniums and Pelargoniums in the same locality. When autumn arrived the Aloes appeared to have nearly succumbed, for their thick leaves fell flaccid, and appeared partly withered, whilst the Geraniums and Pelargoniums, also left to themselves, were all right and flourishing, beating their companions by a long way. I must add that when the Aloes were watered they soon filled their leaves, pricked up their heads, and in a couple of weeks were as healthy and as good looking as any in the

MY ITALIAN GARDEN (LEISURE HOURS).

garden. No doubt this is the way they meet such trials and misfortunes in their own country. The Geranium flowers all winter sparsely, and profusely by March. The choicest Pelargoniums become large bushes, and flower sparsely in March, and profusely in April, in the open ground, in sunny, sheltered spots. From this may be drawn the moral, that in our own country they may be planted in the driest places and safely left to nature.

The Aloe, Squill, and Iris may be put in the same category. They seem to care nothing at all for sun roasting and scorching. The large bulb of the Squill, the root of the Iris, may be pulled up and left in the blazing sun for weeks, and yet once planted and watered they will start and grow as if nothing had happened. Another feature connected with them is that they are what my gardener calls "*des mange tout*," that is, they take complete possession of the soil around, and starve out everything else. If planted in little, or indeed in all but no soil, they thrive and do well, but attain no great size. If, however, they are planted in a border with a good depth of the lime soil of the country, they start into vigorous, determined growth, throw out strong roots in all directions, and smother all other vegetation. The Aloe especially seems determined to have the border all to himself. He sends out roots ten, fifteen, or more feet long, and at the end of these roots appear new plants, which if left to themselves would soon vie with their parent in hungry desperation. We have been obliged to take up the Aloes, the Irises, and the Squills, which we had placed as edgings, and put them on the top of a wide wall. Many of the Aloes we have put "in prison," as Antoine, the gardener says—that is, we have built small nooks and corner terraces for them against the rock, and have put them there by themselves, as in a penitentiary, where they can do no harm to anything else. I have left one large fellow in ten feet of soil to do as he likes, and it is a pleasure to see the vigorous manner in which he is growing. Within a few years he has become a giant in size.

I have no doubt but that the Aloe might be cultivated profitably on the arid flanks of the mountains of the

Riviera. Its leaves contain abundance of strong elastic fibres, which are easily extracted by a process of macerating and cleaning in Mexico, its native country. They are imported to a considerable extent into England for brush-making. In Mexico they are also used for making ropes, nets, and mats. Another species is cultivated in Mexico for the sake of the juice of the leaves, with which an alcoholic drink called "pulque" is made.

The endurance of heat shown by the Squill (Scilla maritima) is not surprising, for I found it in the driest parts of Algeria, and was told that it penetrated into the desert of Sahara, and was all but the last plant to give in.

The same remark, but in a minor degree, may be made with regard to all the other plants that are natives of the country. The Cineraria maritima, planted in a border with plenty of soil, instead of being, as usual here, a small shrub growing out of the crevices of the rocks, becomes in a year or two a huge bush, as does the Lavatera, the very pretty mountain Mallow. We get good plants of Cineraria maritima by pulling them out of the crevices of the lime-stone rocks after heavy rains, which have reached the roots and loosened them. I dare not say where, according to Antoine, these roots go to, but they certainly go a long way, for they sometimes come out several feet in length. The Thyme and Rosemary also grow with wild luxuriance when planted as an edging to the borders, so as even to astonish the natives of the country. The Thyme, as a dwarf dense shrub, so covered with flower in early spring, that the leaves can scarcely be seen, is really beautiful. As I sit writing these lines in a Fern grotto or summer-house overlooking the sea and the Mentone amphitheatre, the Thyme bushes scent the air, and are covered with real wild "Ligurian bees."

Different species of Mesembryanthemum also grow without care or irrigation in the warmest regions, hanging down the sunburnt walls, and on the sloping banks and rocks in huge verdant festoons, like rivers of verdure. When planted so as to hang down perpendicular walls there comes a time when the mere weight of the mass of fleshy leaves strangles the plant and it dies. They require a good supply

of earth for their roots. They begin to flower in March, and are in full flower by the beginning or middle of April. The scarlet variety is more especially grand when covered with thousands of flowers, which make the wall, or rock, or bank, one glowing mass of scarlet. There is a flower at the axil of every fleshy leaf.

All sorts of Cactaceæ flourish in the same vigorous manner; they seem to be able to live, like the Aloe, on an infinitesimal supply of earth, and they appear only to want something to hold on by. I presume that a large proportion of the species of this family would survive here in the open air, as out of a collection of three hundred different species received from a well known Parisian grower, M. Pfersdorff, and planted out, more than two-thirds have survived. The Opuntia, or Prickly-pear, soon becomes a grotesque kind of tree on the Riviera, as in Corsica, Sardinia, Sicily, and Africa; but it is not much cultivated on the Ligurian coast, where its fruit is not held in much esteem.

Roses—Hybrids, Teas, Bengals, Multiflores, Banksias, Centifolias—begin their spring flowering in March, and flower as freely in April and May as they do with us in June and July. If not allowed to exhaust themselves, kept at rest during the hot months, and watered from September, the Hybrids and Teas, especially the Gloire de Dijon and Sofrano, make a new growth, flower freely again in autumn, October, November, and December, and sparsely throughout the winter in warm sheltered situations. In such localities the Bengals and monthlies flower freely all winter, so that there are always Roses for bouquets even in midwinter, grown in the open air.

Chrysanthemums I find in full glory on my arrival in October. They continue flowering until Christmas. There is one large white species, of a trailing habit, which is perfectly beautiful: it covers the ground with lovely white flowers, and looks like a bridal bouquet. Very soon appears the Linum trigynum, which thrives and flowers like a Gooseberry bush. The soil and climate must be just what it requires, for it grows readily from cuttings without care, forms vigorous plants without manure, and bears myriads of handsome yellow flowers, which continue until March,

by which time every branch is covered with seed-pods. Gazanias are quite hardy, flowering in March.

One of the winter-flowering shrubs which does the best, and flowers the most freely, is the Habrothamnus elegans. It grows as a bush some ten or fifteen feet high, is in flower by autumn, and bears myriads of flowers all winter. The Ageratum also flowers all winter freely, in the driest and rockiest parts of the garden. It grows to a good-sized bush, and is one mass of bloom. The same may be said of the composite Osteospermum and of the Datura Stramonium.

The Dasylirium thrives thoroughly in the open ground. Some plants received from Algiers a few years ago, and planted in rockwork, have become large and beautiful specimens.

The Heliotrope likes the lime soil and the sunny dry weather, for it grows and thrives like a blackberry bush, flowering profusely all through the winter in sheltered sunny situations. As it does not die down, but becomes a large ligneous shrub, and bears its sweet-scented ever-renewed flowers on every twig, it is an important feature of the winter garden at Mentone. Its healthy luxuriance in January and February is also a good test of the mildness of the locality, and of its immunity from frost. In the shade and in exposed situations it does not die, but vegetates and flowers sparsely only during the winter.

Lantanas also flower very freely during the autumn and winter, becoming large ligneous shrubs—nearly trees, indeed. They seem to require little or no care, and grow well in dry, rocky, sunburnt situations, bearing the summer heat and aridity uninjured.

Bougainvillea spectabilis is generally considered, I believe, to require rather a high temperature. I have had, however, several plants growing in the open air for some years, which are perfectly healthy, and are flowering freely. I was led to plant them out owing to the following circumstances:—In the garden of M. Thuret, the well-known botanist at Antibes, which is more exposed and colder than Mentone, I found on April 22, the south-eastern façade of the house completely covered with a magnificent Bougainvillea spectabilis in full flower. It

was truly a splendid sight, for the entire front of the house was one blaze with the flowers and rose-coloured bracts of this lovely climber. On my return to my country residence at Weybridge I was surprised to find a Bougainvillea four years old in full flower for the first time, half filling a hothouse. In this house, which had always been heated until that very winter, the Bougainvillea, planted in peat and leaf-mould in a border formed by bricking up an angle, had thriven but never flowered. Owing to alterations it had been kept cool, the frost merely having been kept out of the house. My gardener, who had lived for many years in a leading horticultural establishment, told me that he had always known the Bougainvillea treated by heat, and was surprised to see it flower so very freely under cool treatment. This result, however, coincided with what I had witnessed at M. Thuret's at Antibes. I may add, that I have also since seen it flowering profusely inside and outside a small glass-house at Alphonse Karr's garden at Nice,—at the Jardin d'Essai Algiers, at Malta, and in Sicily on south walls. In the same house at Weybridge we have flowered for years in succession, in moderate heat, other plants, Bignonia jasminoides, and Rhynchospermum jasminoides, usually treated with heat.

The sweet Alyssum, so much used with us as an edging, is a native of this country, and grows luxuriantly in the crevices of the lime rocks on the side of the roads everywhere, indeed flowering freely all winter. Like the other natives, if furnished with plenty of soil it becomes quite bushy, and is then one mass of flowers. Chinese Primulas flourish as perennials.

A remarkable feature in Riviera gardening is that many flowers which with us are annuals and die down in the autumn, are here perennials and attain a considerable size. Thus Petunias survive the winter, and speedily become large bushes, which are covered with flowers early in February; by the end of that month they are quite gorgeous. Carnations also do not suffer from the winter, and become large bushes if taken care of; they flower sparsely during winter in the sun, but not in the shade. Pinks bloom, but not until April; Ten-week Stocks and Wallflowers become large permanent bushes, and are splendid in March, the

Stocks especially are dazzling with the profusion of their flowers. The singular Coccoloba platycladon flourishes as a large bush.

The Narcissus and Tulip seem to like the lime soil, and grow wild in profusion on some of the cultivated terraces, so much so as to be a nuisance to the agriculturists. The Narcissus begins to flower in January, the Tulip not until the middle of February. Hyacinths are found wild, but not abundantly; they thrive well in the soil of the country. Those which I have brought from England, flowered in pots, and, subsequently planted out, have since bloomed in the open garden as brilliantly as the first year. I presume the climate is very much like that of their native country. Indeed they do better in the lime soil of this region, slightly manured, than when planted in Chestnut mould. In the latter they grow too rankly, as if the soil were too rich for them.

Primroses and Hepaticas are found wild abundantly on the shady side of a deep watercourse through a sandstone valley, called the Primrose valley. I have placed them in a light artificial soil, where they flourish, as do Cyclamen persicum, Crocuses, and Snowdrops, the latter brought from England. Snowdrops, however, singularly enough, do not flower before January or February, as in the north. They retain their natural habit, as does the Peach and Apricot with us, and die out after a year or two, as northerners unsuited to the climate of the south. Ranunculi do very well even in the lime soil, but better still in a light artificial mould. They flower by the end of February, and are very lovely.

Camellias and Azaleas, and, in general, all plants with very small, delicate roots, do not succeed in the lime soil, which seems too stiff and hot for them. In the absence of peat, which is difficult to obtain in the dry sunburnt regions of the south of Europe, it is usual to plant them in Chestnut earth, mould formed by the decay of the Chestnut leaves in Chestnut tree forests. But at Mentone even this earth is difficult to obtain, and expensive, for it has to be fetched by mules from some ten miles or more in the mountains. However, I scooped out all the earth from a small slightly-shaded terrace down to the rock, and filled it with

an artificial soil, formed of two-thirds Chestnut earth, one-third sand, and a little powdered charcoal. In this border I planted Camellias and Azaleas several years ago. They have done very well, without any protection winter or summer, and the Camellias have flowered freely each winter from Christmas to April; the Azaleas do not bloom until April. Latterly my gardener has discovered in the higher mountains a region covered with Calluna vulgaris, our ling heather. The soil, to the depth of several inches, is formed by the decay of the heather leaves. I have had a quantity of this soil brought down here, filled two terraces hewn out of the rock, away from olive roots, and have planted them with Camellias from Lago Maggiore which are doing very well. I therefore consider the question solved as to the adaptability of the climate to the cultivation of Camellias in the open, provided a proper soil be supplied. As yet they have not been grown in this district.

The Cape Jasmine or Gardenia, planted out in these artificial soils, grows luxuriantly, and is covered with well-formed buds, which blossom at the end of May and beginning of June. The gardener tells me that the flowers are very beautiful, but that their odour is very bad, actually poisoning the garden. This view of the case is a good illustration of the indifference, nay, positive dislike, of many southerners to the scents which we prize the most, whilst they seem to positively rejoice in the most villanous and most unwholesome odours.

I must not forget to say a few words about the Salvias, many species of which flower and flourish throughout the winter. The most valuable, however, are: the Salvia cardinalis, or imperialis as it is called here, the Salvia gesneriæflora, and the S. splendens. The former grows luxuriantly as a large ligneous bush, from five to eight feet high, and is covered with a profusion of terminal crimson flowers. It begins to flower early in December, and continues to present a gorgeous mass of bloom for a couple of months. The two latter grow and flower with the same luxuriance, beginning to blossom about Christmas, and continuing to form dazzling masses of scarlet flowers all winter. They really are perfectly splendid, and both

deserve the epithet "splendens," especially when in close proximity to a large bush of the Marguerite, or Chrysanthemum fruticosum. This latter shrub assumes a large size, and by the middle of February, in the sun, is covered with thousands of Daisy-like flowers, which look like a sheet of white. These plants, with the Nasturtium, occupy a prominent place in our winter gardening from the luxuriance of their bloom. The Nasturtium flowers freely all winter, but in the sun only, becoming a ligneous perennial climber.

The soil of my garden and rocks being entirely calcareous is not favourable to the general run of Conifers. There are some, however, which seem peculiarly suited to such soils, and thrive on calcareous rocks all over the Mediterranean basin, such as Pinus maritima and Pinus halepensis, and most Cypresses, especially Cupressus pyramidalis, C. macrocarpa, C. Lambertiana. The very beautiful Norfolk Island Pine, Araucaria excelsia, seems to grow vigorously in this soil. There are several very beautiful specimens at the Monaco gardens which have grown to a height of 18 feet in less than four years. I found them flourishing also in the lime soil of Malta. There are several species of Juniper wild on my rocks, and thriving luxuriantly.

Bananas grow, flourish, and ripen their fruit in sheltered warm localities, as, for instance, in the garden of General Mouton, on the beach, below the Roccabruna station. I imported from Algiers several Abyssinian Musas, the Musa Ensete, which have grown vigorously in my garden and have become very beautiful "trees," in the course of less than three years.

Impressed with the idea that in a climate where the Date Palm flourishes so well other hardy Palms might succeed, I sent to Algiers and Marseilles for those marked half hardy in the catalogues, planted them out, and succeeded in getting many through the winter. The Chamærops humilis proves to be perfectly hardy, which was sure to be the case, as it succeeds where the winter climate is much more severe than on this coast. Thus it grows freely and abundantly in sandy, uncultivated localities in the south of Spain—in Andalusia especially—as

freely indeed as Gorse on our commons; and it used, it is said, to grow wild in Provence and on the Riviera. The Chamærops Palmetto and excelsa also have survived the winters in perfect health, as likewise Latania Borbonica, Cocos oleracea, Phœnix farinosa, Sabal Adansonii, Chamærops stauracantha, Oreodoxa Sancona, and Rhapis flabelliformis. Others died, but I believe that I did not give them a fair trial. They came to me from a heated Palm-house, and were at once planted out in November. Perhaps they would have survived had the transition been less sudden. What makes me think so is that some plants of Linum trigynum which as I have stated is perfectly hardy here, flowering profusely nearly all winter, received from Marseilles at the same time, no doubt from a plant-house, languished and perished. Moreover, the Palms were planted in the lime soil of the country, and more extended experience of the Palm tribe in Africa and Spain has led me to conclude that to give them a fair chance the soil in which they are planted should be either mainly or partly siliceous. Certainly, whenever I have seen the Palm growing luxuriantly in masses, the soil has been of this character.

For many winters I have been in the habit of putting Palms, principally Latania Borbonica and Corypha australis, in pots and in *jardinières*, and keeping them in south drawing-rooms, in a day temperature of from 62° to 64°, and night temperature of 54° to 60°. They remain perfectly healthy all winter, and on repotting them in the spring I generally find their roots quite fresh and sound. Palms are much used in this way in Paris, even in winter, for house decoration. They are very ornamental in rooms, and very hardy, bearing the dryness of the atmosphere of inhabited houses with apparent immunity. Indeed, it is sufficient to visit the Palm-houses on the Continent in spring to be convinced of their hardihood. I may mention, as an illustration, the Palm-house of the Botanic Garden at Montpelier, which I visited one year at the end of April. I found it perfectly crammed with Palms of all sorts, small and large, which had scarcely standing room, and yet they all appeared to be healthy and doing well after a long

winter's confinement in a half-lighted lean-to building. I was told that in summer they were nearly all put out in the garden.

Wishing to ascertain, by personal observation, what light horticulture throws on the climate of other protected regions of the north shores of the Mediterranean, more to the west, in the spring of 1866 I made a horticultural excursion from Mentone to Marseilles, starting April the 10th.

At Nice I examined the gardens of Count Margaria, M. Gastaux, and Baron Vigier. In all I found, as in my own, the ordinary spring flowers, Salvias, Iberis sempervirens, Silene, Hyacinth, Narcissus, Ranunculus, Virginian Stock, going off, Roses coming on.

Count Margaria's garden is more especially remarkable for his cultivation of the Camellia in the open air. He has scores of large Camellia trees, from ten to fifteen or twenty feet high, such as are seen on the shores of Lake Como, all looking perfectly healthy, and covered with thousands of flowers. The Count told me that he has been cultivating Camellias for many years at Nice, and had obtained most of his trees from Como. They had given him great trouble. He had tried various artificial soils, the calcareous soil of Nice, as stated, not suiting Camellias or fine-rooted plants in general. He had planted them in soils composed of charcoal, decomposed manure, and sand, and in chestnut leaf-mould, the usual soil selected in the south of Europe, but had never been satisfied with the results obtained until he imported soil from the neighbourhood of Lake Como, which he had done at a great expense. This soil is a rich loamy peat, more compact than the peat of the north of Europe, apparently containing a considerable amount of ordinary leaf-mould. It is more suited to the dry air and scorching sun of the Riviera and Nice climate than ordinary peat. It is the soil in which the Camellia grows to be a tree twenty or thirty feet high, and shows such surprising luxuriance, on the shores of Lakes Como and Maggiore.

At first the Count, conforming to the usual ideas on this subject, planted his Camellias in the shade, but recollecting that the Como trees are planted in the

open air, in a locality nearly as warm as Nice, he boldly threw aside all attempts at shading, removed or cut down all protection, leaving them in the full blaze of the sun, and that with decided advantage. I myself recollect being surprised to see the large tree Camellias at the Italian lake in full sunshine, for wherever I have been, before or since, I have always found half shade inculcated as a precept in their cultivation. Still it must be remembered that the air is not so dry, nor the sun so ardent and scorching, at the Italian lakes as it is on the north shore of the Mediterranean. I would remark that these large tree Camellias, covered with thousands of flowers, beautiful as they are, have one great disadvantage when compared with smaller plants. As the blossoms come into flower in succession, not all at once, many must be fading. These faded flowers do not fall off for some time, and spoil the look of the tree unless taken off with the hand. This the gardener does in a conservatory, but it becomes impossible when the tree is covered with myriads of flowers. Thus, although it sounds very grand to hear of Camellias covered with thousands of blossoms, such trees in reality do not look as well when in flower, as smaller, more manageable plants. The principal sorts cultivated were the Iride, alba plena, variegata plena, Anemonæflora, incarnata, althæiflora plena, flowering in November and December; Henri Fabre, Rival rouge, pulcherrima, Printemps, flowering in January; and Grand Monarque rouge, flowering in February.

In addition to the plants which I have described as flourishing throughout the winter in my garden in the open air, without protection, I found at Count Margaria's perfectly healthy specimens of the following plants:—Dasylirium robustum, juncifolium, longifolium, gracile, glaucum, strictum, Alsophila excelsa, Ficus repens, Beaucarnea recurvata, Agnostus sinuatus, Grevillea alpestris, Chamærops excelsa, Bambusa Fortunei, Zamia villosa, horrida, Phormium tenax, Bignonia Reevesiana, Philodendron pertusum, Bignonia jasminifolia.

The garden of Baron Vigier, which rises by a gentle slope from the sea, looks full south-west, and is thoroughly sheltered from the north-east by the mountain of Villefranche,

It contains many remarkable specimens of some of the above mentioned plants, growing luxuriantly in the open air, as also many others, amongst which I would name Yucca pendula, quadricolor, draconis; Dracæna Draco, guatemalensis; Greigia sphacelata; Ficus Chauveri, Porteana; Brahea dulcis; Dion edule, Chamærops Ghiesbreghtii, tomentosa; Aralia dactylifolia, Araucaria excelsa, glauca robusta; Melaleuca ericifolia.

The garden created by M. Gastaux, now the property of M. Gambart, contains many of the above plants, but is more especially remarkable for the magnificent specimens of the Musa Ensete and of the Araucaria which it contains. They grow alone or in groups on the lawn, and are all noble plants. Two Auracaria excelsa have rapidly grown in the course of a few years to an elevation of thirty-five or forty feet, and are perfectly splendid trees; their foliage is glossy and bright, and each whorl of branches succeeds the other with mathematical precision. The soil and climate must suit them thoroughly; the former is a red calcareous earth, mixed with loam. The Musa Ensete might also be in its native Abyssinia; in three or four years the plants have risen to a height of above twenty feet, and constitute one mass of wide graceful leaves, not drooping as in the common edible Banana, or torn by the wind, as are always the leaves of the latter when planted in the open air, but intact and erect, folding gracefully one over the other. As already stated, I have myself received several from Algiers, which are fast becoming very beautiful plants.

This garden is one of the curiosities of Nice. It occupies a large area a little above the sea level, and has been brought into thorough cultivation. Various avenues have been formed of Eucalyptus globulus, Schinus mulli, Magnolia grandiflora, and they are all growing with amazing vigour; the two former have become large trees in the course of a few years. The Eucalyptus is being planted extensively all over this part of the Mediterranean shore, as also in Corsica and Algeria. The summer warmth, the mildness of the winters, and the dryness of the atmosphere appear to reproduce its native Australian climate, so that it grows with all its natural vigour. As the wood is hard and good—fit

for building and ship purposes, notwithstanding its very rapid growth, it is likely to prove a very valuable acquisition to the arboriculture of the south of Europe. The large trees planted near the railway station at Nice, the growth of half a dozen years, well illustrate its capabilities as a rapid grower. Moreover, it appears to possess the virtue of rendering malarious regions healthy, probably by draining the soil. It has been tried in marshes, but does not thrive in actually wet land, or in very hot climates.

On leaving Nice, I went over to Golf Juan, a few miles from Cannes, to see the gardens of M. Narbonnard, a well-known horticulturist in that region, who supplies most of the Cannes gardens. I found him fully alive to the capabilities of the soil, sun, and climate of this part of the north shore of the Mediterranean. He told me that the failures of most amateurs to raise Palms, Dracænas, Dasylirium, Yuccas, which would really grow and flourish in this region in the open air, were owing, as I presumed, to the specimens planted being received direct from hothouses. In his establishment the plants raised from seeds in heat, and kept under cover for a year or two, are put out-of-doors gradually, kept entirely without protection for a couple of years, and then only given to his customers. By such treatment he could rely on their standing out of doors the slight cold of southern winters. He showed me a large collection of plants usually considered too delicate for outdoor cultivation, even in the south of Europe, which he could warrant to stand the winter cold between Toulon and Pisa. In nearly all this region the thermometer goes down to the freezing point or to a degree or two above or below, several times in the winter. Among these were—Phœnix pumila, leonensis, reclinata; Cocos campestris, flexuosa, australis; Jubæa spectabilis, Seaforthia elegans, Corypha australis, Dion edule, Zamia horrida, Cycas revoluta, Chamærops elegans, Dracæna cordylina, Yucca aloifolia, gloriosa; Casuarina tenuissima, stricta. He had a collection of healthy Araucaria excelsa, from two to three feet high.

The next day (April 12) I was at Cannes, and went carefully over the garden of the Duke of Valombrosa, which is very sheltered from the north on a slope all but due south.

I found vegetation quite as advanced as at Mentone, Nice, and Golf Juan. The Mesembryanthemum flowed down the bank sides like a river of purple and lilac. The Banksian and multiflora Roses were in bloom, other Roses were beginning to open, as also Spiræa, Cytisus, Fabiana imbricata, and Erica arborea. There were in the open, in a state of perfect health, large specimens of Cycas revoluta, Dion edule, Chamærops reclinata, Phœnix leonensis, Araucaria Bidwillii, Aralia Sieboldi, Musa Ensete, Dasylirium longissimum, Yucca tricolor, Alsophila australis, Rhopala Corcovadensis, Dracæna indivisa. Indeed, the impression produced upon me by the careful examination of this beautiful and well-kept garden is, that although some regions of the Genoese Riviera or Mediterranean undercliff, such as Monaco, Mentone, and St. Remo, may be much more sheltered from disagreeable winds than Cannes, and much less exposed to night frosts, the amount of sun-heat received there, in favoured spots, must be quite as great as in any other of these regions. I may say the same of Hyères, which I visited on another occasion a little later (on the 22nd of April). I found vegetation nearly, if not quite as advanced as at Nice or Cannes. Although more troubled with the *mistral*, or north-west wind, which is the pestilence of the South of France or Provence, it must share in the general sun-heat and protection which pertains to the coast regions sheltered by the Maritime Alps and by the Apennines, as proved by its vegetation.

From Cannes I proceeded to Marseilles, and, besides visiting the public gardens, went over, carefully, the beautiful grounds and hothouses of M. Scaramoneya, an eminent Greek merchant, whose gardening establishment, I was told by horticulturists, is one of the best and most complete in the vicinity of Marseilles. I was much struck (April 13) with the extreme difference between the vegetation of this garden and that of the protected coast line which I had just left. The recent presence, and the habitual presence of winter, was evident everywhere. Although in the same latitude, the want of protection from the north showed itself in the complete absence of nearly all southern vegetation such as I have described. No Lemon or Orange-

trees, no Palms, no Dracænas, no Dasylirium, only the most hardy Yuccas. Even the spring flowers were backward, and Geraniums planted out recently in sheltered, sunny situations, had their leaves singed by frost. Deciduous trees scarcely showed any evidence of life, and there were many other evidences of recent severe weather. The gardener, a very intelligent man, was fully aware of the cause of this state of things. Marseilles has no real protection from the north winds, lying as it does at the bottom of the funnel down which the Rhone descends to the sea. Thus, in winter, the thermometer often goes down from 10° to 15° below the freezing point, whilst in summer, owing to its southern altitude, it is burnt up by the scorching heat reflected from the limestone mountains that surround it. Even in summer I was told that the thermometer occasionally descends below the freezing point at night. On the other hand, the south-west wind often blows from the sea so strongly as to bend and break trees and shrubs, or to despoil them of nearly all their foliage. The month of March this year had been unusually severe and boisterous, and many shrubs that had stood their ground for years had been killed. In the conservatories and hothouses, however, I found all the southern plants cultivated in the open air in my garden at Mentone, and at Cannes, Nice, and Hyères. These plants were most luxuriant, and clearly required less attention and heat than in similar houses in the north.

The horticultural knowledge acquired on the Riviera has in its turn been of use to me in England, and some of my readers, gardening on hot sandy soil, may be interested to know how this knowledge has been applied.

My suburban retreat at Weybridge, in Surrey, is situated on the margin of a fir-covered, heather-clad forest. The flower garden is small, only extending over about a couple of acres of siliceous sand. The site was chosen as favourable to the health of man, for it is a well known fact that the worse a locality is for the cultivation of plants, the drier, the sandier it is, the better it is adapted for human health and

human longevity. The converse is equally true. A deep, moist, rich soil, calculated to support rank fertility, such as is found in valleys, on the banks of rivers, is not one that the learned in medicine would choose for a convalescent hospital, such as the admirable institution on Walton Common, a mile or two from me.

I became the owner of this sandy elysium many years ago. I had previously been absolutely a townsman, my life having been entirely passed in two great cities, Paris and London. What I knew of botany and horticulture was merely what townsmen get out of botanical gardens, herbaria, and occasional holiday glimpses of the country, their "Arcadia." I entrusted the laying out of my bit of common to a "skilful" landscape gardener, recommended by a friend, and myself remained passive, mindful of the proverb "*Ne sutor.*"

The future garden, formed of siliceous sand, containing a very scanty allowance of vegetable soil, rested on an iron pan a few inches from the surface, some three inches thick, and as hard as the foot pavement in Pall Mall. It was sparsely covered with Heather, Gorse, and Broom. All this was removed, and the ground "picturesquely" laid out by carting the soil from the centre, and forming irregular sloping beds all round, in front of the drawing-room windows, and at the angles. I paid for deep trenching of the entire surface, and for the destruction of the iron pan, but I was not there to superintend the works, and it was only partially done, as I learnt to my sorrow many years afterwards. Then on these beds of sand, raised on the unbroken iron pan, were planted above 70*l.* worth of Conifers, evergreens, and shrubs, the garden, it must be recollected, not being more than a couple of acres.

The battle for life, initiated under such conditions, was attended with the result that might have been anticipated in a sunny, hot, dry situation, and in a sandy soil. At the end of two years but few of the rarer shrubs were left. Rhododendrons, Portugal Laurels, Hemlock Spruces, Spruce Firs, Taxodium sempervirens, Hollies, a few Deodars, and Abies Douglasii, with Laburnum, Ash, and Birch, were pretty nearly all that remained, and they were anything

but vigorous in growth and size. Then followed years of imperfect garden development.

My gardening experience has thus been gained on two different soils, the one calcareous, the other siliceous, both presenting very little vegetable soil. It has led me, in all humility, to question a doctrine recently broached by one of our great botanical authorities—viz., the adaptability of all plants to all soils. In the battle of life those having natural affinities to particular soils seem to me to gain the day. Of course in rich alluvial soils, mere leaf-mould, all plants thrive. But a large portion of the earth's surface is covered with lime or sand, and not with deep alluvial soil.

During these years, had it not been for what was done under glass, I should have derived but little pleasure from the garden. However, thanks to the knowledge recently acquired in the south, which thoroughly applies to a dry, sunburnt English garden, an era of improvement has begun.

On digging down to the roots of the trees and of the shrubs, to see why they did not thrive as they ought to have done, I found everywhere at different depths the iron pan I fondly imagined totally destroyed. This was broken up, removed wherever it could be got at, and replaced by the best soil obtainable in the neighbourhood. I also levelled most of the raised beds. In reality, it is perfectly ridiculous to make raised sloping beds in a dry sandy, sunburnt soil. Nearly all the rain falls off in summer as from a glazed surface, or from the roof of a house. It is still worse to raise such sand beds when they lie on an unbroken iron pan. The only plants that had penetrated this iron pan were young oaks, and this fact is a good illustration of the immense strength and power of the tap-root thrown out by the acorn. Where the beds were not levelled split lengths of Firs about a foot in diameter were imbedded some four inches at the margin of the raised beds, and filled in with good loam, thus arresting the rain, and preventing it running off the border. Plants thrive wonderfully behind these split Firs, which give a picturesque finish to the beds, with flowering plants, such as Petunias, Verbenas, trailing over.

A hungry, meagre soil, such as I describe, which unassisted grows annuals only a few inches high, being really incapable alone of doing justice to gardening efforts, a great quantity of good loam and manure was mixed with it. Then, instead of depending chiefly on annuals, which in dry seasons in such soils are soon burnt up and perish, a large stock of the plants that I find do the best in the dry climate of the Riviera is prepared and planted everywhere: Sweet Alyssum, Pelargoniums, Petunias, and Marguerites. They are planted out and never watered after the first week or two, even during long periods of drought; yet, as anticipated, they do not flag in the least, and soon became one blaze of bloom. Centaurea candidissima and gymnocarpa also do very well with little or no watering. A margin of Alyssum or Centaurea, with a thickly-planted border of Petunias or Geraniums, and later in the season a background of Dahlias, look remarkably well. Geraniums do not grow much in size in such dry soils, but they flower freely in the hottest and driest weather. Amongst foliage plants I find Iresine Herbstii a failure during drought without water, but it pushes up with the autumn rains, and looks very handsome. On the other hand, Amaranthus ruber does very well during long continued drought, as does the Perilla. Well manured, the soil suits admirably Gladioli.

I find also that, imitating the south, much more ornamental use may be made of Aloes, Cactaceæ, such as Echeverias, and of hardy Palms, both for garden and house decoration, than is usual. They require but little heat protection in winter, and do well in summer anywhere—indoors or out. Palms require a deal of water when growing in warm weather, but Aloes and Cactaceæ demand so little that they really give no trouble at all. The Aloes too reproduce themselves very freely by offshoots.

Subtropical Palms in reality are very hardy plants. I have some healthy, vigorous Palms, Latania Borbonica and Corypha Australis, received four years ago from Algiers, six inches high with four leaves formed. They are now three feet high with twelve leaves. They are plunged in the garden every year from June 10th to September 10th

without any protection. The remainder of the year, nine months, they live in a disused coach-house through which I have passed the flue of a stove, and in the doors of which I have put glass. This is also the winter residence of the Aloes and Echeverias, of the Orange and Lemon trees.

I am unfortunate in my gardens as regards Roses, still the queen of flowers; for neither sandy nor calcareous soils are suited to their constitution. I would except the Banksia, which flourishes in the Mentone lime soil. I have, therefore, in both gardens to rely on soils artificially prepared with loam and manure.

In conclusion, I may say, that the horticultural facts contained in this chapter corroborate the researches made on the shores and islands of the Mediterranean, and prove conclusively that protection from north winds has an extreme influence on climate and vegetation, an influence which it requires many degrees of latitude to compensate.

This fact applies to England as well as to the south of Europe. In building our houses and making our gardens, we do not think enough of protection from the north. With its assistance our climate may be rendered much less trying both to the human and to the vegetable constitution, as is proved by Hastings, Ventnor, and Torquay, the chief merit of which is protection from the north.

CHAPTER V.

THE MEDITERRANEAN.

HISTORY—NAVIGATION—TIDES—DEPTH—SOUNDING—STORMS—TEMPERATURE—FISH—A NATURALIST'S PRESERVE—BLUE COLOUR—THE ST. LOUIS ROCKS.

Βῆ δ' ἀχέων (μη) παρὰ θῖνα πολυφλοίσβοιο θαλάσσης.

HOMER'S *Iliad.*

"There shrinks no ebb in that tideless sea,
Which changeless rolls eternally;
So that wildest of waves, in their angriest mood,
Scarce break on the bounds of the land for a rood;
And the powerless moon beholds them flow,
Heedless if she come or go.
Calm on high, in main or bay,
On their course she hath no sway.
The rock unworn its base doth bare,
And looks o'er the surf, but it comes not there;
And the fringe of the foam may be seen below,
On the line that it left long ages ago;
A smooth short space of yellow sand
Between it and the greener land."

BYRON'S *Siege of Corinth.*

THE ordinary notion of the Mediterranean is that of a blue and tranquil ocean lake. At Mentone, during the winter, this poetical view of the great inland sea is often strangely falsified. Sometimes, for weeks together, it is constantly angry, quite realizing the experience of "pious Æneas" in days gone by. For it then is indeed "troubled and perfidious," ever breaking in angry billows on the shingly beach.

To those who are familiarized with the ever varying moods of our old ocean, ever advancing, ever retreating, this seething, all but tideless sea, which day and night beats the shore with impotent rage, never advancing, never re-

treating, is at first tedious in the extreme. Gradually, however, the eye, the ear, the mind, become accustomed to its monotonous anger, and open to its real magnificence. Then at last we feel that it is a glorious privilege to live, as we do at Mentone, in front of the apparently boundless liquid Mediterranean plain—at one time heaving restlessly, at another, in a calmer mood, covered with myriads of facets on which the sparkling sunshine dances and glitters. The daily rising of the sun, also, in the east, out of the waters, colouring the skies and the waves with hues which surpass those of the rainbow, is a magnificent sight, that never palls.

To a reflective mind, the Mediterranean is the most interesting of all seas, of all waters. Its shores are hallowed by association with the entire history of human civilization. It may be said to have been the cradle of the human race and intellect. When the rest of the world was a blank, a mystery, every region of its circumference was known and inhabited by the nations whom we may consider the fathers of history. The Jews, the Phœnicians, the Egyptians, the Greeks, the Carthaginians, the Romans, all lived on its shores, navigated its waters, and developed their life as nations within sight of it. In early, half-fabulous days, it carried the fair Helen from her Grecian home to Troy, and then brought her ill-used husband, and the kings and chieftains of Greece, to the walls of her doomed asylum. Later, it witnessed the rise and progress of Christianity, was the scene of the voyages, the shipwrecks, and the trials of the apostles. It carried the crusaders on its bosom to fight for the Cross, and bore back the remnant of their marvellous armaments to their northern homes. In modern times, too, the Mediterranean has been the road to the East, the battle-field of the world, the connecting link between Europe, Asia, and Africa.

We have authentic records of the climate and meteorology of the Mediterranean in the writings of the ancient Greeks and Romans, such as Pausanias and Vitruvius, extending to above two thousand years. Both climate and meteorology appear to have been then what they are now, and the Mediterranean was navigated, by those who in-

habited its coasts, pretty much as it is navigated in our own days, in a cautious land and shelter-loving manner. Then, as now, the winter was a stormy time, and the danger of navigating with sails a sea in which there is so much uncertainty as to the direction of the wind, and such frequent collisions between north and south, was so impressed on the minds of mariners, that all long voyages were abandoned. Merchant vessels were pulled on shore, and remained "in port," free from the dangers of the deep, from the beginning of October until the beginning of April. Marine insurances were known at Athens even in those times; but navigation in the six forbidden months was considered so dangerous that no insurances were taken, and the interval was specially set apart for deciding litigation in maritime cases, as a time when all the parties concerned were sure to be at home.

Mariners in those days hugged the shore, and at the slightest unfavourable change ran into the nearest port, or took shelter under the nearest headland; and this, notwithstanding all the modern improvements in navigation, they do even now. With a slight breeze, the sea, near the land, is studded with vessels, their white lateen sails extended, like swallows skimming over the waters of the deep; but if a stiff wind and a heavy sea rise, they instantly seek shelter, and disappear. Then, for days together, not a sail is seen, merely a stray steamer nearing the land for shelter in north winds, until fine weather returning, again lures them out of their retreats.

The vessels now employed in the coasting trade are probably much the same, in size and form, as those used by the old Greeks. They are, generally speaking, from about twenty to fifty tons burden, seldom larger. This is no doubt owing to the circumstance that most of the smaller ports are ineffectually protected from the wind and the sea, so that they have to be pulled up on the beach for safety. This is done by means of windlasses, and with the assistance of the entire maritime population. They are thus unloaded and loaded on dry land, when they are again dragged and pushed down the beach into the sea, by main force.

In the small ports all along the Riviera scores of these small vessels may be seen, high and dry on the beach, waiting for cargo or fair weather. There is a jetty now building at Mentone which already gives some shelter, but up to quite recently all the vessels that came and departed were thus hauled ashore. So it was that the Greeks pulled up their vessels on the shores of Troy, after landing, and it was when thus drawn up that they were fired and destroyed by their leader.

Although poetically called tideless, the expanse of water that forms the Mediterranean obeys the same laws as the great ocean. Like the ocean, it feels the vicinity of our cold satellite the moon, and rises and falls, at stated hours, under its influence. The body of water, however, is so much smaller than that of the ocean, notwithstanding the great depth of the Mediterranean, that the moon's attraction produces a comparatively trifling effect.

The height of the tidal wave varies considerably in different regions of this great inland sea, ranging from a few lines to a foot or more. On one occasion, when at Naples, at an hotel near the shore, an invalid, I used to amuse myself by watching the sea, as it broke against the sea-wall beneath the windows. During a calm, which lasted more than a week, I observed that a rock crowned with sea-weed, immediately in front, was daily covered and uncovered by an evident tide.

Whenever the wind blows on or off the shore, it raises or lowers the sea-level, all over the Mediterranean, several feet. This makes it all the more difficult to recognise the existence of the tidal wave. At Mentone, when the wind has been blowing several days from the south-east or south-west, the sea reaches nearly to the road in the eastern bay. When, on the contrary, it has been blowing several days from shore, not only the shingle, but a line of sandy beach is often uncovered.

The style of navigation adopted by the Mediterranean sailors, may and does render them expert boatmen, but it is said, also, to make them less fit for lengthened navigation than their more adventurous northern brethren. The navigation of an inland sea cannot, certainly, rear such a

race of hardy sailors as is produced by the navigation of the wide Atlantic and Pacific Oceans, and by the pursuit of the great fisheries, amidst the storms and icebergs of the Northern seas. No wonder the sailors of Columbus, accustomed to never lose sight of land for more than a few days, should have trembled when they had been weeks out at sea, and should have feared they were sailing into an unfathomable abyss, from which there was no return.

When the sea is breaking furiously on the beach, as it often does in winter, there is but little marine life visible. The sea-level being ever the same, owing to the absence of perceptible tides, there are no exploring walks on the sands at low tide, as on our coasts, no searching after zoophytes and fuci. On calm days, however, a walk to the extreme end of the Cap Martin introduces the amateur naturalist to pools lying between jagged rocks, where there is much to be observed. There are also other points along the eastern coast where similar pools may be found, containing various kinds of sea-weed, sea anemones, hermit crabs, inhabiting pretty shells which they have dragged from deeper water, and other marine treasures; only to be discovered, however, on days of perfect calm.

The Mediterranean is a deep sea, and its depth is very great on this coast near the shore. According to Lyell, Saussure found a depth of two thousand feet a few yards from the land at Nice, and from Toulon to Genoa the sea is everywhere very deep near the shore. This is always the case in the Mediterranean, and elsewhere, whenever mountains terminate abruptly in or near the sea, as along the Riviera. The abysses of the sea are probably at least as deep as the mountains in their vicinity are high; and as at Mentone the higher mountain range reaches the sea line, there are no doubt alpine valleys many thousand feet deep within a very short distance of the shore—a grand idea!

Thus is explained the absence of deltas at the mouths of the large torrents which descend from the mountains, and fall into the sea in the Mentonian amphitheatre. For countless ages these torrents have been rolling, during the winter rains, masses of soil and boulders into the sea, and yet

no impression has been produced on the outline of the bays, which remain perfect. No doubt these boulders, which form the shingly beach, soon fall into these all but unfathomable depths, just as stones rolled down a house-top would fall into the space below. The same remark applies, in part, to the Paillon at Nice. Thus, at the bottom of these marine valleys are now forming, no doubt, beds of clay and sand, and perhaps of conglomerate, similar in character to the one on which the village of Roccabruna is perched.

The Mediterranean may truly be considered a deep sea, for, in a great portion of its extent, its depth varies from five to ten thousand feet, or between one and two miles—a fact which has been ascertained in laying the telegraph cables, which cross it in various directions. Yet, even this depth is trifling, compared with that of the Atlantic, between Europe and Africa, and America. A depth of 3150 fathoms, or 18,900 feet, has been reached (*Challenger*, 1873), and it is presumed that the depth may extend to thirty thousand feet, nearly six miles.

Formerly deep-sea sounding was effected by means of a lead or weight fastened to a line, and thrown out from the ship. By this plan, however, it was found difficult, if not impossible, to reach a depth much above six hundred fathoms, or between three and four thousand feet. If the lead was heavy, it could not be hauled back, and the line broke; if it was light, it was floated away by currents. The impossibility of hauling in a heavy weight, once it has reached deep water, will be easily understood, when it is known that at a depth of fourteen thousand four hundred feet the pressure of the water is as three tons on every square inch of surface. To this must be added the weight of the whole line used for deep-sea soundings, which would itself, at that depth, amount to one ton. The difficulty has, however, been overcome by the application of steam power, which is now used in sounding and dredging at great depths. Weights are used, so contrived, that on touching the bottom, they separate from the line, which can then be hauled up. Thanks to this contrivance, and to the use of steam, the greater part of the Mediterranean and of the

Atlantic has been surveyed. The Atlantic has been found to be a deep valley, lying between Europe, Africa, and America, and dipping deeper below the sea-level than the highest mountain rises above the surface of the globe.

It was supposed by the pioneer of deep-sea dredging, the late Edward Forbes, that at about 600 fathoms' depth all life ceased, that below this level all was gloom and darkness, and that life existed not. The progress made since his death in deep-sea dredging has dispelled all such views, proving them to be altogether erroneous. Life is found everywhere, in the uttermost depths of the ocean, as on the highest mountains. Sir John Ross, in 1818, dredging in Baffin's Bay, brought up sea worms from 1000 fathoms, and from 800 fathoms, a Medusa. The latter was then thought to have been entangled in the line, but is now recognised to be a species inhabiting those deep waters.

In 1861, Professor Fleming Jenkin, sent to repair a ruptured telegraph cable between Sardinia and Bona, brought up a fragment of cable from 1200 fathoms, with a true coral, a Caryophillia, attached to it. Later, Dr. William Carpenter and Dr. Wyville Thomson, in the surveying ships, *Lightning*, 1868; *Porcupine*, 1869—70; and *Challenger*, 1873—4, have found life in the Atlantic at, all but the deepest depths reached, 2850 fathoms or 17,000 feet. At these immense depths it is doubtful if light penetrates, and the source from which the living organisms find the elements of nutrition they require is still a mystery, a debated point.

Although the Mediterranean is only separated from the Atlantic by the peninsula of Spain, the elevated and mountainous character of that country, and the other conditions I have elsewhere enumerated, prevent a large proportion of the storms that occur in the western Atlantic reaching it. Thus M. Matteuci has recently published a paper in which he shows that out of 118 storms coming from the Atlantic and striking England and Ireland, 49 only reached Italy. In October, November, and December the progress of these storms to Italy is much more frequent than at other periods; while in winter, and still more in summer, a great diminution occurs. In the three

months named, out of 29 storms 23 reached Italy; in April, May, June, July, and August, out of 41 only 3 arrived at Italy. These facts substantiate my own observations as to the frequency of south-westerly storms in autumn, and explain the usual fine weather in this inland sea in summer.

The Mediterranean is a warm sea. At all times of the year it is five or six degrees warmer than the Atlantic Ocean under the same latitude; and in winter it is never cooled down to the same extent as the latter in northern and even temperate regions. In the open oceans there are, deep below the surface, cold currents from the north and south pole, which have been revealed by the deep-sea soundings of Lieut. Maury and others. Thus, in the Atlantic Ocean,—at the bottom of the Gulf Stream, a temperature of only 35° Fah. has been found, whilst the surface is above 80°. The Mediterranean, a land-enclosed sea, is not accessible to these polar currents, which is one of the causes no doubt of its exceptional warmth. Even in winter, I have never found it lower than 54° on the Mentone coast six or ten feet below the surface.

Dr. Carpenter states that if we go deep enough in the ocean we shall always find the temperature as low as 32°; but in enclosed seas, such as the Mediterranean, the deeper and colder water, circulating from the poles, cannot enter; therefore the lowest bottom temperature is determined by the lowest winter temperature of the surface. Scarcity of life in the Mediterranean he considers to be owing to a deficiency of oxygen in the water, due to its combining with a large quantity of organic matter brought down by the rivers and emptying into it. Thus, while in the Atlantic we usually find 20 per cent. of oxygen and 40 per cent. of carbonic acid, in the bottom waters of the Mediterranean there is often only 5 per cent. of oxygen and over 65 per cent. of carbonic acid. He considers the Red Sea and its neighbourhood the hottest region on the earth, the temperature of the surface water rising to 85° or 90°, and the bottom temperature being about 71°, corresponding to the greatest winter cold. Outside of this sea, however, in the Arabian Gulf, the bottom temperature is 33°. As the lowest bottom temperature of the Red Sea is as high as 71°, living

corals should occur there at greater depths than anywhere else in the world.

There seems to have been little if any change in the temperature of the Mediterranean and of its shores within the memory of man. The same vegetation exists and flourishes around it that existed and flourished when the earliest records were penned, those of Sacred Writ and of Homer. The geological features do not either appear to have changed within that period, except as regards slight elevations and depressions of some coasts. Thus, the climate has probably been the same during the historic period. It has been characterized in former historic days, as now, by sunshine, by little rain, and by an atmosphere which does not contain one-half of the moisture of the English atmosphere. Indeed, its climate has no doubt been what it is now ever since the continents of Asia, Africa, and Europe have assumed their present shape, ever since the existence of the rainless tract of which the deserts of Sahara, of Arabia, and of Cobi are the expression.

Owing to the paucity of rain and to the small number of large rivers that empty into the Mediterranean, the supply of fresh water to that sea is much below the amount taken up by evaporation. To meet this deficiency a wide stream or current of sea-water, many hundred feet deep, sets in through the Straits of Gibraltar from the Atlantic, at a rate of from three to six miles an hour. This inward current was formerly supposed to be owing to a difference of level; the Mediterranean, in this hypothesis, being lower than the Atlantic. The researches of Admiral Smyth, and of other observers, have proved this view to be fallacious. The Atlantic, the Mediterranean, the Black Sea, the Adriatic, and even the Red Sea, have all the same level.

Admiral Smyth and Sir Charles Lyell doubt the existence of a deep counter-current from the Mediterranean to the Atlantic through the Straits of Gibraltar. Lieut. Maury, on the contrary, considers its existence proved by reasoning as well as by observation. Were such a counter-current not to exist, he says, the waters of the Mediterranean would not only be slightly salter than those of the Atlantic, as they actually are, but would become very much

salter, like those of the Dead Sea, which has no outlet, and would deposit salt at the bottom from over-saturation. This is not the case, which proves, he thinks, that there *must* be a deep counter and outer current of water, of a denser gravity—from increased saturation with salt—than the upper and inward Atlantic current. Sir Charles Lyell admits the presence of an under current at times in the Straits, but thinks that more recent observations show it to be merely tidal.

The exceptional warmth of the Mediterranean exercises, as we have seen, an influence on the climate, which it modifies favourably. It also exercises a remarkable influence on the finny tribes that inhabit it.

As Lieut. Maury states, the cold oceans and seas are those in which fish, whatever the cause, especially good edible fish, thrive the most, and are the most prolific. The cod, the mackerel, the herring, the sole, the salmon, all belong to northern latitudes. Fish are abundant and good on the north coast of America, east and west, and on the north coast of Europe. The shoals of herrings, mackerel, pilchards, cod, that visit our seas every year, all come from the north, and return to it. Between the Gulf Stream, as it ascends the Atlantic from the Gulf of Florida, and the coast of the United States, there is a band or wedge of water, descending from the north, which is many degrees colder than the ascending waters of the Gulf Stream itself. This band of cold water is full of good edible fish, whereas the warmer waters of the Gulf Stream contain comparatively few fish, and those not good. In the tropics, and in warmer seas also, the fish are neither so good nor so numerous, although more brilliant and fantastic in colour and shape. The Mediterranean is no exception to this rule, as I can testify from considerable experience. The fish it contains are, in general, neither good nor abundant, which accounts for the Roman Catholic inhabitants of its shores consuming so large a quantity of the product of the herring and cod fisheries of Northern Europe.

At Mentone the great depth of the sea at a short distance from the shore is no doubt an additional drawback, as very deep waters are neither favourable to the breeding of

fish, nor are they good fishing-grounds. Our best fishing-grounds are all shoal sandbanks, as, for instance, the Dogger Bank, and that of Newfoundland.

On a fine day, when the sea is calm, the Mentone fishermen are on the alert betimes, and the bay is studded with boats. A very close-meshed bag net is thrown out and buoyed, and then dragged in shore by long ropes, with great excitement on the part of those engaged. There are often ten or twelve men, women, and children to each net. When at last, however, it is drawn in, and its contents are scattered on the beach, these efforts recall the fable of the mountain in labour. There is seldom anything in the bag but a few pounds' weight of a small transparent whitebait kind of fish, a few sardines and small red mullets, some diminutive sword-fish, and two or three crabs the size of a five-shilling piece, that have not been able to get out of the way.

When the nets are drawn, and their living contents are strewn on the shore, the young, and I may say not unfrequently the old, are seized with an ardent desire to save some of the struggling inmates of the deep, or in other words, to establish an aquarium. Basins, tubs, all kinds of utensils are enlisted in their behalf, but I am sorry to add with but very little success. The small flat fish, sardines, sword-fish, the shrimps, after darting about furiously for some hours, vainly endeavouring to escape from their prison, turn on their side and die. They really appear to die from nervous exhaustion, for it cannot be for want of aërated water, as the same result is observed when either a large or small vessel is used. I find that Mr. Philip Gosse, the charming naturalist, also takes this view of the early death of marine animals thus suddenly confined. He strikingly remarks, "It is as if a man, shut up beneath the dome of St. Paul's, should be found dead by daylight for want of air to breathe. Are the gills of an anneloid or a mollusc more exacting than the lungs of a man?"

The small-meshed nets must be very destructive to young fish, and as they are everywhere used on the Mediterranean coast, they must tend to render its waters even more unproductive than Nature intended. The fishermen on these shores maintain, as did our own fishermen with reference

to whitebait, that the small transparent fish they catch in such numbers are a separate species that never grow any larger, and which it is, consequently, legitimate to destroy for food. To settle this question, I brought some home, preserved in spirits of wine, and submitted them to the well-known ichthyologist, Dr. A. Günther, of the British Museum. After careful examination, Dr. Günther wrote me as follows:—"There can be no doubt that the specimens you have submitted to me for examination are the young fry of some species of *Clupea*, and from the position of the vertebral fins, and the number of vertebræ, I believe them to be the young of *Clupea Sprattus*, or a species closely allied to it." Dr. Günther has satisfactorily established that our whitebait are the young fry of the herring, so that both on our shores and on the Mediterranean the wholesale destruction of these small fish is equally unjustifiable.

The French Government, which has paid great attention, during the last few years, to pisciculture, to the replenishment both of its salt and fresh waters with fish, has become alive to this fact. A commission has recently been appointed to inquire into the condition of the fisheries on the northern shore of the Mediterranean, with a view to their improvement; and the probable result of its labours will be a prohibition of the use of these small-meshed nets—a very necessary step. They unquestionably tend to destroy the fisheries wherever used, by annihilating the small fry on the shallows. Unless some such measure is adopted, fish must all but disappear from this part of the Mediterranean shores, stimulated as their destruction is by the presence of wealthy fish-eating strangers. A few years ago the small fry, like whitebait, were sold at Mentone for four sous (twopence) a pound; the larger for eight sous. Now the small fetch twenty, and the larger thirty.

Wherever I have been, in Corsica, in Italy, in Sicily, I have always found the local fishermen, and many better informed persons, pertinaciously maintain that these small fish are not the spawn of larger fish, but a peculiar species that always remains small, and that were these nets not allowed a valuable kind of food would be lost to all classes of society. We have seen that such is not the case, and it

is to be hoped that their destruction will be legally prevented.

The gentle art is cultivated at Mentone by many zealous native piscatorians, who may be seen day after day fishing from the parapet of the quay at the entrance of the town, from rocks lying in the sea, or from the shore. Some of the visitors also, inspired by their example, occasionally enter the lists. Their patience and skill, however, meet with but a poor reward, as might be anticipated from what has been stated. Their principal recompense appears to be the lazy enjoyment of the harmonies of nature so dear to all who love "the contemplative man's recreation." The melody of the waves breaking at our feet, the surging of the blue waters over the seaweed covering the submarine rocks, the varied hues that the fuci assume, as they are alternately expanded, buoyed up by the coming wave, and then left high and dry as it retreats, the effects of the ever-varying cloud, shadow, and sunlight on the sea, the rocks, the mountains, and the horizon, are never better observed, or more thoroughly appreciated, than by the unsuccessful angler. Very little piscatorial success satisfies the true lover of nature, and such nearly all enthusiastic piscatorians are. This love of nature is, I believe, the key to their oft-abused pastime. In the educated it is felt and analysed, in the uneducated it exists as an instinct, a sensation, but is not analysed.

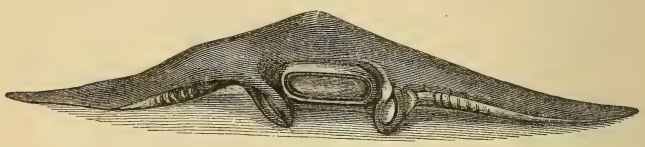
Cuttle-fish are abundant in these waters, and are eaten by the inhabitants as a delicacy. They are occasionally found of enormous size. I have seen a monster, at least six feet in length, with villanous-looking tentacula several feet long. Such antagonists would be very formidable even to a strong swimmer, if they attacked him. They could easily surround him with their suckers, and perhaps pull him under water; but I have not heard of any such accident. Monstrous cuttle-fish, with shells twelve feet in circumference, characterized the warm seas of the chalk period and of the epoch in which the nummulites of the St. Louis rocks existed. Even now, in tropical seas, there are cuttle-fish of enormous size. Well authenticated tales are told of tentacula as thick as a man's arm, thrown by

cuttle-fish like those of yore over the sides of a boat in these regions, and dragging seamen overboard, or upsetting large boats. These "strange fish" have long ago died out in the Mediterranean, but probably those I have seen are their lineal but degenerate descendants. The small and beautiful nautilus is still alive, although it, too, lived in these remote days along with its awful companion.

The fishing for cuttle-fish is one of the features of these shores. The boat is rowed gently along the shallow parts of the bay, where the rocks are covered with seaweed. In the prow sits the fisherman, holding a long stick, to which is tied a piece of meat as bait, partially covered with a few green twigs. This perch is poked among the seaweed, under the rocks and stones, in likely places. If the cuttle-fish is there he makes a clutch at the bait, and clings to it with such extreme tenacity that he is easily hauled into the boat. At night fishing is often carried on by means of a fire lighted in a kind of metal basket suspended over the prow of the boat. The fisherman uses a two or three pronged lance. He leans over the side of the boat and explores the bottom of the sea, by the glare of the fire, as the boat glides gently along. If a fish is seen many feet under the water the trident is thrown with all but unerring accuracy, and the fish is brought up wriggling on its teeth. This night-fishing has a picturesque effect as seen from the shore. It is also practised on the Italian lakes.

There is an interesting fact connected with the Mediterranean that is but little known, even by the scientific world. This sea is the favourite habitation, the home, of one of the largest and most singular fish that inhabit the wilderness of waters, the devil-fish. The devil-fish is a species of monstrous hideous ray or flounder, flat, broad, of enormous dimensions, and of extraordinary muscular power, with a huge mouth and stomach, all one, in the front of its misshapen head. It inhabits the tropical seas, the broad Atlantic, as well as the Mediterranean, and is everywhere an object of curiosity and awe, when seen or caught, which it very rarely is. The African traveller, Le Vaillant, caught one twenty-five feet long in the body, and thirty-feet wide in the fins, on one of his journeys to Africa,

Other travellers have seen them floundering on the surface of the sea, apparently as large as the vessel they were in. Two were caught at Villefranche, near Nice, in 1807, in one of the tunny nets, and have been minutely described by Risso, the learned Nice naturalist, under the name of "Cephaloptera Massena." The one first caught, a female, weighed 1328 pounds; it moaned piteously. The male was seen for two days to hover round the nets where she was taken, searching for its mate, and then was taken in the same net! The poor loving devil-fish were thus united in death. The male was smaller, weighing 885 pounds only.



THE DEVIL-FISH.

The Mediterranean fishermen are acquainted with the devil-fish traditionally, calling it *vacca*. They believe that its appearance is an omen, and portends disaster. A small species is not uncommon in the West Indies, and is sometimes pursued, but rarely taken, in Kingston harbour, Jamaica, according to the Hon. R. Hill, who has published a very interesting account of this curious fish (*Intellectual Observer*, October, 1862). The drawing given is copied from this article. When one of these fish is observed floating on the water, the mode of attack is to harpoon it. The monster immediately strikes out for the sea, with amazing velocity and power, towing its enemy along with it. Other boats attach themselves to the first, and they are all towed out, generally for several miles, before it again rises. Indeed, they are frequently obliged to abandon the chase altogether.

Often, when, steeped in the southern winter sunshine, I lie in my favourite leisure haunts, among the St. Louis rocks, gazing at the Mediterranean, in one of its calm,

placid moments, I think of these monsters and repeat to myself the harmonious verses of Mrs. Hemans:

> "What hidest thou in thy treasure-caves and cells,
> Thou ever-sounding and mysterious sea."

Perhaps at that very moment some of these monstrous antediluvian fish are disporting themselves in the deep waters at my feet; for it is not in the very deepest regions that even the largest fish can and do live. In the great depths of the sea, so marvellously reached of late, there is little if any light, and only the most rudimentary kind of life. The sound often brings up microscopic shells undamaged in their delicate structure by friction. They have fallen there through the water, and there they remain motionless. The dead sailor, who is thrown over the side of the vessel, with a cannon-shot attached to his feet, descends to these depths, there probably to remain, standing erect, preserved by the pressure of the water, until the Day of Judgment.

As spring advances some of the fish, which then descend in such enormous shoals from the Northern seas into the Atlantic, find their way into the Mediterranean, through the Straits of Gibraltar, and are very welcome. Thus, very large mackerel and whiting are caught in great numbers, and a large and much valued fish, the tunny, makes its appearance.

"The tunny or *thynnus* is a fish which belongs to the genus mackerel, *scomber*, which it resembles in form. It grows to more than seven feet in length, and often weighs as much as four hundred weight."

After passing the Straits in dense masses, the tunny skirts the coasts of Spain, France, and Italy, to spawn in the Black Sea. It visits the smallest bays and coves, which renders its capture feasible—indeed, easy. Large and strong nets are fastened by cables and anchors, at the entrance of the bay where they are expected, and a sentinel is posted on some eminence to watch for their advent. When they are seen approaching along the coast, the fishermen get ready, and as soon as the fish have

entered, they close the nets around or behind them. The poor fish are then slaughtered with lance and knife, the sea being reddened with their blood. As we have stated, their flesh, although not very delicate, is still much appreciated by southerners.

The tunny reach Mentone in early spring, and about the middle of April may be seen in the eastern bay, off Cap Martin, the preparations being made for their advent. These preparations are on rather a small scale, and consist merely of three or four boats, a long net in the water, and the look-out, perched on a kind of platform raised some thirty feet high on the shore.

In some parts of the coast of Italy, Sardinia, and Sicily large nets, called madrigues, half a mile or a mile long, are used in fishing for the tunny. These nets, which are divided into chambers by cross nets, are sunk in deep water, at some distance from the shore. The tunnies, which follow the coast in a shoal, pass between it and the net, and on reaching the extremity of the latter are arrested in their progress by a cross net. They then turn, and are driven into the chambers of the large net by the fishermen, where they are destroyed, as described, by hundreds, in favourable years. The sport is stated to be very exciting; but, unfortunately, it takes place in the month of May or early in June, when health tourists have already taken flight to the north.

The tunny is not only allied to the mackerel, but also to the bonito, a beautiful tropical fish of a lovely blue colour. The bonito, although a tropical fish, is represented in the Mediterranean by a distinct and equally beautiful species, the *Pelamys Sarda*, the length of which is from twenty to thirty inches.

Whales not unfrequently pass into the Mediterranean through the Straits of Gibraltar, for a stately promenade or "swim." On one of my excursions to Corsica we met one when out of sight of land. The steamer passed very near him, and he indulged us with a splendid spout. The French sailors called the whale "un souffleur" (a blower), and he well deserved the term.

Porpoises are numerous, and as amusing in their gambols,

leaps, and unwieldy gyrations, as in the northern seas. They constantly come in shore. On one occasion we met with a shoal out at sea, evidently on frolic intent; they were apparently pursuing each other, like boys at leap-frog. Regardless of our presence, they kept springing out of the water, with a kind of flying leap. Sometimes half-a-dozen would be in the air at a time, all in a line. They passed our bows, and then were soon out of sight, as our courses diverged.

If, on a calm fine day, a height of some hundred feet or more is attained above the shore, and the surface of the sea is carefully examined, it will be seen to present ribbons, as it were, of water of different colours, lighter and darker. These ribbons describe all kinds of irregular liquid paths and sinuosities in the bay, and for a mile or two from the shore. They are varying marine currents, the cause of which it is difficult to determine. Inequalities of surface at the bottom, differences of temperature, winds, all, no doubt, contribute to produce them. They illustrate on the surface of a calm sea the deeper and more powerful currents which play so important a part in the history of the great oceans.

These currents are the preserve, the delight of the marine naturalist, a fact but little known. I was introduced to them by Professor Pagenstecher, of Heidelberg, a well-known and enthusiastic naturalist, who came to Mentone two springs purposely to study its marine zoology. It seems that the currents draw into their course all the vegetable or animal detritus floating at the surface of the sea where they pass. The presence of these "elements of nutrition" attracts animalculæ and the smaller inhabitants of the deep. They, in turn, attract the larger molluscs, and thus these currents become a kind of naturalists' cover, where the inhabitants of marine depths inaccessible to dredging are found in abundance.

The best time for this kind of fishing is early in the morning, at sunrise. The boat should start from the shore just as the sun appears on the eastern horizon, so that the current or fishing ground, previously determined on, is gained as the sun's rays illuminate the depths of the sea—

"And now the purple clouds
Rise like a mountain; now the sun looks out,
Filling, o'erflowing with his glorious light
The noble amphitheatre of hills."—ROGERS.

All animated nature becomes endued with fresh life, an universal desire for food is felt, and the briny paths are soon crowded with voracious customers.

The fishing is carried on by means of two nets, like butterfly nets, only larger, fastened to stout sticks. One is of good size and stout texture, the other smaller, and of more delicate material. They are held out, four-fifths immersed in the water, from the side of the boat, the concavity turned in the direction the boat is going, and of course catch everything in their way. There should also be several jars of sea-water in the boat, ready for use. Every now and then the smaller and more delicate net should be taken in, the water allowed to escape from the bag end, and then the bag itself turned inside out into one of the glass jars of sea-water. Although the eye may detect nothing on looking at the water from above, if the jar is lifted up and the observer looks "through" it, he will generally see, by transmitted light, many very singular forms of marine life, which the net has caught disporting on the surface of the sea, but which are quite invisible to the eye from above. The same plan may be followed with the larger net, but it is more especially intended to catch the larger molluscs and zoophytes, which the eye distinctly perceives swimming or floating in the current. I thus became acquainted, thanks to the Professor, with many very singular and beautiful forms of life, and was highly delighted with this new mode of fishing. To him I owe the following notes of what we found :—

In these currents will be found a great number of small crustaceans called Copepodes, of a white, orange, or red colour, which seem to rest on their antennæ; Saphirines, which, rising and falling, look like a precious stone or a drop of dew, and sparkle like a flower; marvellous larvæ, Asterias and Ursins, which, with the friskiness of youth, are taking an excursion in deep waters, whilst the father and mother are concealed amongst the rocks in quiet bays;

Radiolariæ, gelatinous balls like chains of frog's eggs, punctuated with blue and yellow, and presenting microscopic spikes of silex of most elegant shapes; small Pteropodes, which, protected by a calcareous box, and supplied with two wings, swim about in the warm waters like flies and butterflies in the air. The glass jar into which the net is turned and washed is soon filled with these members of the microscopic world, and to a naturalist they give days of study, pleasure, and information.

When the larger net is used a sharp eye must be cast on the waters near the boat, as it is only intended to catch the Molluscs and Zoophytes, which are perceived swimming or floating in the current. The observer will probably soon discover chains of Salpa, either the gigantic form, Salpa Africana maxima, with its nucleus of a Sienna brown colour, or the more delicate species named "democratica maxima," coloured in ultramarine. Sometimes more than a hundred individuals are united in a chain several feet long. This is a singular genus, in which the mother gives birth to one daughter very different from herself. This daughter, in her turn, produces hundreds of children united like the Siamese twins, but each like the grandmother. At first they are all united, and form chains and rings on the surface of the sea, but one after the other, as their turn to reproduce the race arrives, separate from the rest, and give up the dances and pastimes of youth for the more serious duties of life.

Among the treasure trove will be jelly fishes, belonging to the family of Gorgonides, which even in the jar try to catch some small fry, as likewise Ctenophores, especially the Beroe ovata, a real crystal cucumber, the Eucharis multicornis, which, rose or yellow tinged, seems as it passes under the bark to be merely a reflection of the full moon, and is not much more solid; the girdle of Venus, which, gliding serpent-like in the waves, is nearly invisible, although three feet in length. When seen, its edges present all the colours of the rainbow, owing to the vibration of ciliary hairs.

If the day is a favourable one, the "fisherman" will probably secure a Siphonophora, a swimming polymor-

phous colony, generally upheld by a small bladder full of air, provided with a column of bells wherewith to swim, and carrying below a crowd of polyps armed with urticant filaments, opening their mouths on all sides like a polycephal Hydra; the Praga cymbiformis; the Hippopodius luteus; the Abyla pentagona; the Diphyes acuminata; the Farkalsa cystrima, but for the latter will be required the largest jar, which one colony will fill to the brim; the Phromima sedentaria, a crustacean which preserves its children carefully in a cradle of crystal taken from the very substance of some gelatinous animal; the large Firoles, called by the Mediterranean fishermen "olifante di mare;" lastly, the Cymbulia Perosisi, which conceals its soft body in a slipper of crystal, a slipper that recalls the one Cinderella wore. It is one of the most elegant objects imaginable, and for its sake alone the ladies at home who are anxiously waiting the return of the "foolish fishermen," will pardon the disturbance created by the departure before break of day.

Professor Pagenstecher was very successful, he told me, during the few weeks he spent with us, and returned to Heidelberg laden with numerous scientific treasures, and a very happy man.

I may remark that I have never known an unhappy, misanthropical naturalist. As a class, I think they are truly the happiest and most contented of men. Constant communion with nature draws their thoughts from the cares, the anxieties, the heartaches, the passions of life, and thereby purifies and elevates their minds; whilst every advance in knowledge, every discovery made, increases the admiration, the reverence felt for the Divine Author of all things, who has so marvellously organized everything for the best.

All who sail on or live near the Mediterranean notice the peculiar blueness of its waters. This tinge would seem to imply that they contain more salt than the waters of the ocean. The more salt held in solution by water, the bluer it is; the less salt, the greener it is. Hence the light green hue of the Polar seas, which contain much more fresh water than those of the tropics. The latter are gene-

rally, from this cause, of a deep indigo, like the Mediterranean. The evaporation from the surface of the Mediterranean abstracts a much greater quantity of water than its rivers supply. Hence the strong current that sets in from the ocean at Gibraltar, and also, no doubt, the blue tinge of its saline waters.

The correctness of the above views has been questioned. I would, however, refer those who doubt to the first three paragraphs of Lieutenant Maury's very valuable work on "The Physical Geography of the Sea." It is to this really fascinating book that I am indebted for the explanation I have given of the peculiar indigo-blue colour of the Mediterranean. It may be considered proved, he states, by facts derived from other regions of the world's waters, and by actual experiments.

The Gulf Stream, which comes from the tropics, from the Gulf of Mexico, where the heat is extreme and evaporation very great, is of a deep blue colour, like the Mediterranean. This colour is so different from that of the surrounding ocean that the line of demarcation is observed with ease, and in calm weather half of the ship may be seen in the Gulf Stream and half out. Analysed by Dr. Thomassy, by means of a delicate instrument, the salt has been found to be 4 per cent. in the blue Gulf Stream, opposite Charleston; $4\frac{1}{10}$ per cent. in the blue trade-wind region; whereas it was only $3\frac{1}{2}$ per cent. in the greener waters of the Bay of Biscay. Again, in the salt-works on the shores of the Adriatic and of France, the vats or pools into which the sea-water is received for evaporation exemplify the fact. After standing some time in one pool, for the purpose of evaporation, the concentrated sea-water is passed into another, and so on. As it becomes more and more loaded with salt the colour gradually changes from light to deep blue, to indigo, and finally to a reddish tint when crystallization is about to commence. "The salt-makers judge of the richness of the sea-water in salt by its colour; the greener the hue the fresher the water."

The colour of the waters of glacier streams, of the Swiss lakes, or of the Rhine at Bâle, is quite a different hue to that of the Mediterranean. It is a kind of light bluish

green, and is evidently owing to some other physical cause.

In describing the natural features of the Mentonian amphitheatre, I must not omit to mention, that its olive and pine woods are alive with feathered songsters. The notes of some are very musical, and those of others reproduce sounds familiarly heard in the summer in our own pine forests in England. The same cannot be said of the small green tree-frogs that scramble about on the branches of the Olive-trees, or of their larger brothers that live in or near the tanks. In winter they are, fortunately, silent; but as spring arrives, they commence every evening an endless chorus, which lasts until after daylight, much to the dismay and distress of those who live in their neighbourhood. They certainly more than compensate for the nightingale, which arrives, as with us, early in May, and warbles all night long in every tree. Many of the birds are winter emigrants from the north, like ourselves in search of a southern sun. Others in spring make a more or less extended sojourn on the North Mediterranean coast on their return from more southern regions. The olives and pine cones afford them abundant food.

On the sea, near the shore, are constantly seen troops of sea-gulls, attracted by the household refuse which the inhabitants are rather too prone to cast over the sea-wall into the salt water. When wind and storm are looming on the horizon they are more especially numerous, sometimes congregating in flocks of several hundred. They generally swim about on the waves near the shore, and look very picturesque when present in such numbers. Sea-gulls are interesting birds in more ways than one. When riding on the waters they have more than the usual grace and elegance of aquatic birds, and when soaring aloft, all but motionless, or describing eddying circles, the strength and smoothness of their flight, and their perfect self-possession, are pleasant to behold. Sea-gulls appear to soon become familiar with man in the pursuit of food, and a truly remarkable feature in their history is the pertinacity with which they follow vessels, especially steamers, for the sake of the offal thrown overboard. In the Mediterranean

they lie in wait off the ports, and a chosen band starts with nearly every steamer, and follows it, fair weather or foul, to its destination. They have thus accompanied me on most of my longer Mediterranean excursions, such as from Corsica to Marseilles, from Messina to Marseilles. On the latter voyage a troop of eight joined us as we left the port of Messina, and were flying about us for three nights and two days, apparently ever on the wing. Whenever I was on deck they were there, not merely following the vessel, but leisurely flying in circles half a mile in advance of us, or a mile or two behind. Bits of bread thrown into the sea brought them all to us in a few seconds. Their wonderfully acute sight at once detected the prize, when they would descend from a great height, like an arrow, and pounce on the smallest morsel floating in the foaming furrow traced by the vessel. The captain said that they knew the track of the Mediterranean steamers as well as the oldest pilots. I have been told that they follow in the same way the steamers from New York to Europe for ten days and more. They probably rest and sleep occasionally on the bosom of the sea, and afterwards overtake the ship by their rapid flight.

The martins or swallows, as I have stated, never abandon the sheltered ravines and sun-heated rocky mountains of the Pont St. Louis throughout the winter, finding sufficient insect life to maintain them. Although in an exceptionally warm and sheltered nook like these rocks they may thus remain, the general swallow population migrates from the Riviera as it does from more northern countries, crossing the Mediterranean to Africa. It is not really known where they finally go in mid-winter. Probably they keep moving south as winter advances. In Algeria they are not more stationary than in southern Europe, going south, into the desert when winter, cold, and rain sets in; unless it be in some exceptionally sheltered nook, such as the Gorge of Chiffa. There I was told that they remained all winter, as at the St. Louis rocks at Mentone, keeping company with the monkeys, of which, however, we cannot boast. Some travellers speak of seeing them in Senegal in mid-winter, and Herodotus, twenty-three centuries ago, states

that swallows are found throughout the year at the sources of the Nile. As he certainly had not visited the Nile head, a glory reserved to our countrymen in recent days, he must have had the same hazy notion of what becomes of swallows in winter that we have.

The presence of the martins attracts hawks and occasionally the majestic eagle from the adjoining Alpine regions. I have often lain, in mid-winter, for hours among the rocks at St. Louis, high above the blue vessel-dotted sea, with the wild Thyme, the Rosemary, and the Cneorum in full flower around me, watching their movements. As they gain confidence they resume their rapid flight in and out of the rocks, chasing the insects as on a fine English summer evening. Suddenly a noble hawk, occasionally a majestic Alpine eagle, appears, soaring aloft with wide-stretched pinions. The poor martins, stricken with fear, instantly seek a refuge, and in a few seconds disappear from the gaze of their ruthless pursuer. Sweeping from one rock to the other, he seems to enjoy the confusion and solitude he has created, and remains "the monarch of all he surveys."

My friend Mr. Traherne Moggridge, author of the work I have mentioned, "The Flora of Mentone," who has made the ornithology of the Riviera a study, tells me that the rock Martin swallow does not visit England in the summer, although it ascends quite as far north, in an easterly direction. Like many other summer migrants from the south, it takes a north-easterly course. The rock Martin is the sole member of the swallow genus that winters in Europe, and that only in a few warm sheltered localities, such as Gibraltar, Mentone, and the coast of Greece. Mr. T. Moggridge says that he has noticed other birds of passage during the winter at Mentone, such as the black Redstart and the Willow Wren. In company with these birds, although of very different habits, he has observed the beautiful Rock Creeper (*Tichodroma saxatilis*), a relative of the Tree Creeper of our woods. Like this latter bird, it is rarely seen on the wing, but creeps up steep and apparently impracticable surfaces of rock, with a jerking motion and slight spasmodic expansion of the wing, dipping its long bill into the crevices of the rock as it ascends.

The body is of a mouse grey, but the upper part of the nearly black wing is of a fine crimson colour, and there is a row of white spots on the quill feathers. The Pont St. Louis rocks are a favourite resort of this very interesting bird, but no doubt it may be seen on other points of the coast. Thus it has been noticed near the railway tunnels through the rocks on the road between Finale and Genoa; it is well known in Italy and Spain.

One of the ornaments of the flower garden in autumn, and a constant visitor to our rooms in winter, is the humming bird hawk moth (*Macroglossa stellatarum*). It is a large brown moth, with a mouse-like body and head, brilliant eyes, small wings, and a tongue an inch or two in length, usually curled up proboscis shape. It has the power to dart this tongue, with instantaneous rapidity, into the corolla of flowers, to rifle them of the nectar on which it feeds. When hovering over flowers I am told that it thoroughly resembles the humming bird of tropical countries, whence its name. These moths are occasionally seen in warm summer weather in England. They are no doubt driven into the houses by the increasing cold of the nights. They are really pretty creatures, and I have often had several in the drawing-room for days together, hovering over cut flowers, darting their tongue in and out of the corollas, and feeding on their sweets.

The St. Louis rocks rise all but perpendicularly from the sea, on the eastern side of the eastern bay, the Genoa road being blasted from their flanks. They present, near the shore, a deep, irregular, and picturesque cleft or ravine, occupied by a watercourse which falls as a cascade from a considerable height. The road crosses this ravine by a bold and elegant bridge of one arch, which is now the frontier between France and Italy. Masses of rock, irregularly divided and worn by the convulsions of nature, and by the action of water and weather, form the boundaries of the ravine. They are partly naked, partly clothed with mountain plants, Lentiscus bushes, Thyme, the Cneorum, Valerian, Cytisus, Coronilla, and Bluebell. These rocks are continuous with the ridge that ascends to the Berceau, one of the high mountains of the Mentonian amphitheatre

(3850 feet). A few hundred feet above the sea line the scene becomes very wild and grand. The mountain assumes the form of a fantastic mass of huge rocks and stones. In one region they form a species of stony torrent, arrested in its rapid descent; in another they are piled one over the other in every conceivable shape. It is the wildness and naked stony confusion of a mountain summit, within a few hundred feet of the sea-level.

On the eastern side of the St. Louis ravine, lying on the side of the mountain, seven hundred feet above the sea, is a very picturesque, grey-looking village, Grimaldi by name. It is seen from the town and the eastern bay, warming itself in the sun, and is generally rendered conspicuous by patches of white which surround it; this is the linen of the inhabitants, lying on the mountain to dry. On the left side of the Genoa road, which winds above the shore blasted out of the solid limestone rocks, below the village, is an old ruined mediæval castellated tower, which formerly belonged to the Counts of Grimaldi. It was built either to protect the coast and the town from the attacks of the roving Moors and Saracens a thousand years ago, or by the latter when they were masters of the country. It is known by the name of the Grimaldi or Saracen tower, and it is from a small watch turret near it that is taken the very truthful view of the Mentone amphitheatre reproduced in the frontispiece. This is one of the most sheltered spots that can be found in the entire district, and the view from it is certainly one of the most complete and most lovely. It is here that I have established my winter garden. With a view to the cultivation of flowers and to the tranquil enjoyment of "invalid lazarone life" in hours of leisure, I have become, as already stated, the happy proprietor of the old tower, of the smiling sunny terraces that adjoin it, and of a considerable extent of the rocky mountain side.

At the bottom of the picturesque ravine, which is crossed by the bold St. Louis bridge, there is a watercourse, that is made to irrigate and fertilize all the terraces to which it can be diverted. Indeed, the groves of Lemon trees which cover the mountain side before we reach the St. Louis ravine owe their existence to its waters. In the lower part of

THE ST. LOUIS BRIDGE AND ROCKS.

the ravine there is an aqueduct on arches, which tradition says was built in the time of the Romans. Several hundred feet higher there is a small water canal, scooped out of the rock, which descends from the upper part of the ravine. As it is a short cut from the village of Grimaldi to Mentone, the villagers constantly make use of it, although there is scarcely foot-room for one person, and the precipice is immediately at the side. In one part the aqueduct is so much in a hollow of the rock that there is scarcely room to pass upright. A tale is told of a young girl who all her life had blithely and fearlessly traversed this path. She got married, had a baby, and carried the cradle on her head, as is the custom of the peasants in this country. One day she took the familiar road, with the cradle in the usual position, forgot the rock above, struck against it, and was dashed over the precipice with her child.

On the western side of the St. Louis ravine are the "warm terraces," as I have named them, the warmest region of Mentone. On the rocky mountain slope the owners have scooped out and built a series of terraces, which have been entirely planted with Lemon-trees. These trees owe their existence entirely to the streamlet which has been diverted from the ravine watercourse, and which irrigates the terraces, filling large tanks for summer use. Sheltered on every side except the south and south-west, saturated with sunshine from early morning to evening, the rock and soil never cool, and cold and frost are unknown, even on exceptional cold days. Thus they constitute a natural hotbed, where vegetation is always in advance, where winter is unknown, and where invalids may safely while away the day in the coldest weather.

The stranger wandering among the rocks above these terraces may accidentally come across a small black metal cross. This cross commemorates a painful catastrophe that occurred some years ago. A sprightly English girl of ten, whose parents occupied the villa below, escaped with a younger sister from their governess, and, in light-hearted play, scrambled up the rocks. Having reached this wild region, the elder one climbed upon a peak to wave her handkerchief in recognition to a friend below. Unfortu-

nately she lost her footing, fell head-foremost, and was killed on the spot. There was universal mourning for the sad fate of the fair English child on the part of the kind-hearted Mentonians, and even now the fearful accident is never mentioned without deep sympathy for the bereaved parents.

The beach underneath and beyond the St. Louis ravine is singularly beautiful. The red limestone rocks, the red rocks, as they are generally called, ascend perpendicularly to a great height, and the shore is merely formed of débris and of advancing buttresses of the same formation, worked by the waves into the most jagged, irregular, and fantastic shapes. When there is a strong south-westerly gale blowing the waves are thrown on these rocks with extreme force, and are broken into foam and spray that rise, with a noise like thunder, to a great height. On one point there is a subterranean passage or tunnel, into which the sea is engulfed, to escape further on in the shape of a magnificent "jet d'eau." The sight, in stormy weather, is very grand. The Bone caves are at the base of these red rocks, above the coast line.

Along and on the shore rocks used to pass the road to Genoa, a mere mule track, as before stated. Remains of it still exist, and it constitutes one of the most picturesque and pleasant promenades. The view of Mentone and of its amphitheatre is very fine from this point. About half a mile beyond the torrent that descends from the St. Louis ravine, the path passes along the shore over a gully, by a bridge of one arch, so thin and light that it is crossed for the first time with some apprehension. It is said to be of Roman construction, and, small as it is, seems worthy of such an origin.

Some bold rocks which here rise out of the sea near the shore, and give the command of deep water, are the favourite haunt of anglers. I have tried my fortune, in a piscatory sense, but with very little success. Would not some plan of ground-baiting be likely to attract the finny tribe? The refuse which the townspeople throw into the sea, over the quay, at the entrance of the town, seems to have that effect; a fact which accounts for the habitual presence of native anglers. I leave this question, however, to those

more learned than myself in the art. On these rocks is found the "samphire," which is not confined to the dizzy heights of Dover. The region is also a favourite habitat of the Cinerea maritima, and of the elegant Lavatera.

A strong sea wall, and a broad foot causeway have been built along the shore of the eastern bay, from the town to the St. Louis rocks. Thus an admirable promenade, sheltered from the north-east, has been formed, most valuable to the invalids who inhabit the eastern bay.

I would, however, warn all real invalids never to lounge or sit on the sea-beach unless there be a dead calm. Generally speaking, when there is a perceptible sea-breeze, with rolling waves, it is dangerous. As previously explained, although this breeze apparently comes from the south, it is often in reality a north wind deflected landwards. As such it may produce a chill, and give rise to colds or sore-throats, or to even more serious mischief. I often feel inclined to stop my carriage, and philanthropically to warn invalid strangers, whom I see sitting or lying on the beach in January or February, as if they were enjoying "*otium sine dignitate*" on our own shores in July or August. This leads me to remark that in our active, feverish modern civilization the old classic saying which I have quoted (awry) has ceased to be true. "Ease or leisure and dignity" no longer go together. Now, it must be ease without dignity, or dignity without ease. The two can no longer be combined.

CHAPTER VI.

THE CLIMATE OF THE GENOESE RIVIERA AND OF MENTONE CONSIDERED MEDICALLY.

"Whoever wishes to investigate medicine properly, should proceed thus: in the first place to consider the seasons of the year, and what effects each of them produces: for they are not all alike, but differ much from themselves in regard to their changes."

HIPPOCRATES (On Airs, Waters, and Places).

To appreciate the medical characteristics of the climate of the Genoese Riviera and of Mentone in general, it is only necessary to weigh the meteorological facts enunciated in a preceding chapter.

A cool but sunny atmosphere, so dry that a fog is never seen at any period of the winter, either on sea or land, must be bracing, invigorating, stimulating. Such are the leading features of this region—the undercliff of central Europe.

Behind the mountains which skirt the Riviera and the Mentonian amphitheatre, in midwinter, as we have seen, frost and snow may and often do extend up to the north pole, more than two thousand five hundred miles. On the other hand, the wind blows from the northern quarters during the greater part of the winter season. The air must, therefore, be cool, and would be cold, were it not warmed by an ardent sun, darting its rays through a cloudless sky and a dry atmosphere—were it not, also, for the summer heat stored up in the rocks, and given out by them. These causes keep Mentone free from frost when it reigns all around, but cannot make it a tropical climate. There is no such climate on the shores and in the islands of the Mediterranean; there is no region in the Mediterranean basin free from the influence of the cold polar winds.

Such a winter climate, however, is perfection for all who want bracing, renovating—for the very young, the invalid middle-aged, and the very old, in whom vitality, defective or flagging, requires rousing and stimulating. It unites, indeed, all the conditions calculated to exercise a beneficial influence in any state of lowered vital power.

The cool, but pleasant temperature, the stimulating influence of the sunshine, the usual absence of rain or of continued rain, the moderate dryness of the air, render daily exercise out of doors both possible and agreeable. Indeed, in such a region life may be spent out of doors throughout all but the entire winter. Such an existence, in such conditions, has a direct tendency to create and to sustain the appetite, and to improve the digestive and nutritive functions.

The pores of the skin, also, are kept permanently open, and thus the lungs are relieved of the extra burden which is always thrown upon them in northern climates, when the cold damp of winter supervenes. It is, indeed, because the functions of the skin, as an excretory organ and as a purifier of the blood, are all but arrested by the cold in our climate, that sore-throat, influenza, bronchitis, and kidney diseases in general are so prevalent in winter, or existing, become so aggravated. The work of blood-purification, accomplished in warm weather by the skin, is thrown in winter on the mucous membranes of the lungs and air passages, and on the kidneys. These organs are congested, choked, as it were, and succumb to the extra work, the blood itself becoming poisoned by its deficient purification of worn out materials. Hence the colds or mucous membrane inflammations, and the fever that accompanies them, in the winter season of the north, as likewise various other forms of chest and kidney disease. Hence also the comparative immunity from these affections on the Riviera.

I selected Mentone as my winter residence many years ago, because I was suffering from advanced pulmonary consumption. Many of the invalids who have followed my example have laboured under the same dire disease. That the choice was a rational one, will, I think, be generally admitted, on consideration of the facts above stated.

When I first arrived, there were scarcely any strangers, but since I have drawn the attention of my fellow practitioners to the value of this climate as a health resort in chest affections, the foreign population has yearly increased, and numbered last winter (1873–74) above sixteen hundred. It contains representatives of most European nations; the English and French, however, have hitherto been the most numerous. Since the translation of this work into German (in 1863) many Germans have made it their winter abode. Our American cousins are also finding their way to Mentone in yearly increasing numbers, since the fourth edition was published in New York (1870).

Phthisis is essentially a disease of debility. It principally attacks those who have received organizations deficient in vitality from their parents, or who have injured the vitality of an originally good constitution by excesses of any kind, or in whom such a constitution has been impaired by over work, or by hardships and privations independent of their own will. In such a disease—one dependent on defective vitality—a bracing, stimulating climate, such as I have described, must be beneficial, and has been most decidedly so, both in my own case and in those of the many whom I have attended.

With the assistance of sunshine, a dry, bracing atmosphere, a mild temperature, and rational sthenic treatment, hygienic, dietetic, and medicinal, I have found pulmonary consumption in this favoured region, especially in its earlier stages, by no means the intractable disease that I formerly found it in London and Paris. After fifteen winters passed at Mentone, I am surrounded by a phalanx of cured or arrested consumption cases. This curative result has only been attained, in every instance, by rousing and improving the organic powers, and principally those of nutrition. If a consumptive patient can be improved in health, and thus brought to eat and sleep well, thoroughly digesting and assimilating food, the battle is half won; and the principal benefit of the winter climate of the Riviera is the assistance it gives the physician in attaining this end.

Amongst the consumptive patients I have attended, those who were in the early or even secondary stages of the

disease, and had vitality and constitutional stamina left, have mostly done well. I have seen, in many young persons, well-marked crude tubercular deposits disappear, gradually absorbed. In various cases of accidental phthisis in middle-aged, over-worked men, the amelioration has been still more apparent. I have seen well-marked cavities become partly or entirely cicatrized, and the constitutional symptoms gradually subside; the general health and strength steadily improving. For more extended information respecting the influences of the climate of the Riviera in pulmonary consumption I must refer to my special work on the subject.*

I must, however, be allowed to state here that the fifteen years' experience I have had of pulmonary consumption in the south of Europe has led me to the conviction that there is a greater probability of the disease being arrested, of life being prolonged, and even of a cure being eventually effected if the patient can winter in the south than if he remains all winter in the north of Europe. I certainly have infinitely more confidence in and reliance on the value of a winter residence in the south than I had fifteen years ago, when I first left England for the winter, a confirmed invalid. As a practising physician in London, I had not seen the good results from wintering abroad that I have since experienced and witnessed at Mentone. The explanation, however, to me is obvious. Four out of five of my former patients and friends evidently committed all kinds of mistakes, against which, from want of experience, I could not guard them as I can now. They travelled about for pleasure, when they ought to have considered themselves confirmed invalids on the brink of the grave, and have remained stationary. They often took up their abode in large, dirty, fever-poisoned southern towns, more occupied in sight-seeing than in health-seeking, and constantly exposed to many pernicious influences. Is it extraordinary that they should generally have come back as bad as, or even worse, than when they started?

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* "On the Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine, in its connexion with Modern Doctrines." By James Henry Bennet, 2nd edition, 1871. London: Churchill.

The most satisfactory cases that I have witnessed have been those in which climate has not been alone relied on, in which the patient has been under constant and judicious medical management, in which the routine of daily life has been guided by medical experience, and in which the various therapeutical resources that our improved knowledge of phthisis gives the profession have been steadily persevered in. Patients left to themselves, or to rules laid down for their guidance at home, commit all kinds of errors. They constantly omit to do what they ought to do, and carried away by the example of others, or by the first dawn of improvement, do much that they ought not to do.

In some instances, even of advanced phthisis, in which there is, from the first, but little chance of recovery, the invalids, surrounded by dear friends, are so charmed with the sunshine, with the foreign scenery, and with the vegetation, that it more than compensates for all their fatigues. Indeed, I have known them rejoice to be under the bright sky of the south, even in the midst of great physical trials. To such sufferers, admirers of the picturesque, mentally alive to the beauties of nature, to the glory of the sun daily careering in a blaze of light through the heavens, to the beauty of the "ever-changing" sea, to the shadows on the mountains, the quiet repose out of doors all but daily enjoyed makes ample amends for the sacrifices of exile. They descend the valley of the shadow of death rejoicing, nor can any one, in their case, regret the fatigue encountered in the journey from England.

Persons suffering from pulmonary consumption should also be cautioned against trusting to the follies and delusions of homœopathy and of other modern fallacies. They should ever remember that they are labouring under a disease, curable in some cases, but usually fatal; from a disease that is still, with all our improvements in medicine, a verdict of death to a large proportion of those whom it attacks. Is it not, therefore, tempting Providence, throwing life away, abandoning the last chance of recovery, to discard the experience of ages, and to entrust life to the unknown professors of doctrines which every master-mind

in Europe, engaged in the study and practice of the medical profession, pronounces insane delusions, to say the least?

Many persons who have always suffered from bronchitis in England are quite free from it at Mentone, owing probably to the dryness of the atmosphere. I have an old friend at Nice, a London physician, now above sixty, who abandoned London many years ago, owing to repeated attacks of winter bronchitis, which at last led to very serious complications. He made a winter settlement at Nice, and, ever since, has there passed the cold season, perfectly free from all bronchial mischief, and in flourishing health. In several instances of this description with which I am acquainted, the attempt to once more spend the winter in England has been attended with a return of the bronchial affection with its usual severity.

In one case, attended during my first winter's sojourn in the south, which I quote as illustrative of what climate and perseverance may accomplish, a gentleman aged forty-three, with softened tubercles, who had suffered from chronic laryngitis and bronchitis for nearly three years in England, lost all cough and laryngeal irritation after two winters' residence at Mentone, and has had no serious return of disease. In his case phthisis followed persevering attempts to get rid of gout in the chronic form, supervening on a first acute attack. Exercise, and a rather low diet, were evidently carried too far, and continued too long, considering the arduous nature of professional pursuits. This patient, who got rid of gout merely to fall into tubercular cachexia, is now quite well, and shows no external evidence of the past disease.

It is easy to understand that a dry, bracing, cool, invigorating climate such as I have described, should have a beneficial influence on the respiratory mucous membrane of persons who have still some of the vital power of youth, or some constitutional stamina left. When we add to this, all but daily exercise in the open air throughout the winter, in the midst of magnificent scenery, removal from the cares, anxieties, and duties of ordinary life, pleasant social intercourse with fellow-sufferers and their families, all tuned to the same unison of cheerful and hopeful resignation, we

certainly have, united, the hygienic influences calculated to renovate the general health, and thus to arrest the development of tubercular disease. Indeed, I am firmly convinced that a warmer and milder winter climate, only to be found in a tropical or semi-tropical region, is less favourable to the recovery of health in chronic chest disease;—provided, however, rigid attention be paid to the precautions necessary in a region where the temperature varies so constantly as it does on the shores of the Mediterranean. Heat and moisture debilitate and relax the economy; moderate cold and a dry atmosphere invigorate and strengthen it. In the treatment of phthisis, the renovation of the constitutional powers, of the general health, is of primary importance.

Chronic bronchitis does well, as we have seen, under judicious medical management. Generally speaking, it gradually dies away, provided, also, the patient be prudent, obey hygienic and medical rules, and do not make a stove or hothouse of the room where he or she lives, day or night. By falling into this latter error, as nearly all from the north-east of Europe do, it is quite possible to make a northern climate of Mentone, and to fall from one cold into another throughout the entire winter.

The form of asthma which is connected with chronic bronchitis, the emphysematous form, also does well. As its gravity depends on the bronchitis, if the latter is improved so is the asthma. I believe, indeed, that many of the pitiable sufferers who present this complication, and who every winter get worse, with the vista before them at home of inevitable aggravation of their disease, might attain all but entire freedom from chest suffering by passing several successive winters on the Riviera. To them, in reality, the health question is as important as it is to the consumptive. This form of asthma gradually leads to death in those who are advancing in life, and that through a stage of great suffering. The heart, the liver, the kidneys, often become secondarily congested and diseased, and death is the result of the combined influence of these various secondary maladies. In corroboration of this statement, I may mention that I have known several

instances of patients arriving at Mentone in all but a dying state from chronic bronchitis and asthma, who have gradually rallied, and eventually attained a very bearable condition.

I cannot say the same of the spasmodic form of asthma, the form that occurs in childhood, in middle age, at any period of life, apparently from nervous causes. I have known such cases do well, but the majority do not. I presume, that the climate is too dry, too stimulating, and I am inclined to think that a moister climate, such as that of Pau, Ajaccio, Palermo, Algiers, or Madeira, would be more likely to suit. I do not say that persons suffering from nervous asthma should not try Mentone, for, as I have stated, I have known these cases do well; but I think it would be imprudent for such patients to make a regular six months' winter settlement before trying whether it suits them or not. This remark applies equally to other and different climates. Nervous asthma is so capricious a disease, so much under the influence in its manifestation of hidden, obscure, nervous, and meteorological conditions, that it is impossible to tell beforehand whether a locality will agree or not. The best plan, therefore, is to go first to an hotel, and to be guided by results.

I would mention, that to some asthmatic persons the mere fact of living near the sea, or a few hundred yards from it, may make all the difference between severe suffering or perfect immunity, and conversely. At Mentone, therefore, both situations should be tried in case of need. I have observed that nearly all persons who in England are ill when living in immediate proximity to the sea, appear also to suffer at Mentone. I should therefore advise no such persons to settle there unless they can obtain one of the houses built away from the sea. To live at Mentone, in a large proportion of the houses, is really like living on shipboard; for most of those first built, and nearly all the hotels, are situated on or near the beach. Within the last few years, however, a number of villas have been erected at some distance from the sea-shore, within the amphitheatre, as also two hotels, the Hôtel du Louvre, and the Hôtel Beau Séjour. To chest cases in general, the proximity of

the sea is, I think, decidedly beneficial. Sea voyages are universally recommended in such diseases, and nearly all the sanitaria for the consumptive, such as Torquay, Bournemouth, Ventnor, Malaga, and Funchal, in Madeira, are on the sea-coast. Indeed, salt is lauded by some modern physicians as a panacea for phthisis. When the sea beats on the shore at Mentone, the spray is thrown inland in the shape of a fine dust-like vapour, which extends fifty or even a hundred feet from the beach, and must be inhaled by those who live in the houses that line the shore. The air coming from the sea is undoubtedly the purest and most wholesome we can possibly breathe.

There is another class of patients who do not appear to benefit, as a rule, by the climate at Mentone—those suffering from the more severe forms of spasmodic and intermittent neuralgia. I presume that the dry, keen, cool air of the north Mediterranean coast in general is too stimulating for such cases. In one, that of a lady, a former patient of my own, whom I had sent from England on account of agonizing tic, which usually lasted all winter, and who had been free the first year at Palermo and Naples, the tic returned with its usual violence at Mentone, and lasted several months, as it would have done in England. During subsequent winters, passed at Naples and Malta, this patient has again partially escaped. In other less severe cases I have known the neuralgic attack, apparently roused by the cold days, long to resist medical treatment.

I must add, however, that in some instances patients liable to neuralgia have completely, or all but completely escaped from their usual enemy during the entire winter. It appears to me that these favourable cases occur mostly in persons merely liable to neuralgic pains in connexion with deranged digestive and constitutional states, the unfavourable ones in persons suffering from neuralgia in its more aggravated form, a very difficult malady to deal with in any locality in any climate.

To those who, without having any particular ailment, are weak, ailing, dyspeptic, below par indeed, and who want invigorating and bracing, I have found the climate very valuable as a winter residence.

To weak, sickly children, the daily sunshine and out-door life are inestimable. Each winter I see many delicate children rally in a most marvellous and gratifying manner. Instead of suffering from catarrhal affections, as is so often the case at home, they seem to enjoy a happy immunity from these ailments. Constantly out of doors, in the sunshine, they soon become ravenous for food, sleep well, and get fat and rosy. It is the very climate for strumous children who generally lose ground during our long northern winters. Climate alone, however, must not be trusted; good food, plenty of air day and night, and judicious medical treatment if required, are essential.

The very aged, like the very young, seem to thrive in the mild winter climate of Mentone. They can get out constantly, either on foot, in Bath or donkey-chairs, or in carriages, instead of being confined to the house for months, as is often the case in England. Moreover, they are never exposed to extreme cold, so fatal to old age. In England a sharp frost kills the aged as it kills flies in autumn; the blood is driven internally, and fatal congestions of the lungs, brain, and heart occur, or still more fatal inflammatory affections. All these dangers are escaped. Instead of the cold east winds of the spring, which yearly fill the obituaries, there is a truly genial, balmy spring, the spring of the poets.

The Riviera climate, in its more sheltered regions, is equally propitious to those suffering from disease of the kidney: congestion, albuminuria, gravel. The dryness and mildness of the atmosphere, by promoting cutaneous transpiration, relieve the kidneys as well as the lungs—for in our climate, as we have seen, the kidneys have also extra work to do in winter. Moreover, the power of living in the open air, and the improvement which follows in the general health, is of as great importance in these diseases as in chest affections. I have met with many very remarkable cases of improvement and even of cure.

One important reason why the climate of Mentone and the Riviera is beneficial in all these forms of disease is, that it is seldom or never, at the same time, *cold and wet*. When the weather is cold it is with north winds, and the air is

dry. When the air is moist south winds prevail, and the temperature is mild.

I have long remarked in England that colds in the head, sore-throats, attacks of bronchitis and influenza, only become prevalent when the weather is both cold and wet. Cold dry weather alone does not produce them epidemically, nor does mild damp weather. However wet and damp it may be in England, or in the midst of the rain and mists of the west coast of Scotland, as long as a summer temperature lasts, and the thermometer is at or above 60°, very few colds are met with. Let it, however, fall to 40°, 45°, or even 50°, and then damp or wet weather is immediately followed by the development of catarrhal disease on a large scale.

Indeed, rainy weather, when the thermometer is not below 55° or above 65°, night or day, is not injurious to health. The cool, rainy summers which we sometimes have in England, and which characterize the west coast of Scotland, are healthier than dry, warm, fine summers.

Thus, the summer of 1860, one of the most rainy known for many years, was also one of the healthiest. In 1861 it rained all but incessantly on the west coast of Scotland, from the middle of June until the middle of September. During the summer quarter the results of observation at fifty-five stations of the Meteorological Society showed that the rainfall was 15·66 inches, instead of 8·80, the average of the previous years, and yet the season was unusually healthy. Thus the mortality was 175 deaths in every 10,000 persons living, whilst in England it was 199. There was the usual difference between the town mortality and that of the country:—in the towns it was, in Scotland, 204 in every 10,000 persons, in England 220; in the country, in Scotland, 142, in England 178. These data are taken from the quarterly report of the Registrar-General.

I was residing or travelling on the west coast of Scotland during the greater part of this quarter, as an invalid, and found that the temperature kept between 55° and 65°. I scarcely ever found it either above or below. I observed around me, also, as on previous visits, all but universal immunity from catarrhal affections, colds, or coughs. I usually spent the day fishing, often under an umbrella,

rowed in a boat on the lochs, and never once caught the slightest cold, although very liable to do so in a lower temperature if there is the least damp. In England the summer was much drier and warmer that year. Heavy rain no doubt acts beneficially in clearing the atmosphere, the earth, and the drains, of putrescent matter and of miasmata, especially when rain falls in great quantities in a short time, as in warm climates.

On the other hand, continued rain and damp, with a temperature at or above 70°, hyperstimulates the liver and skin, predisposing to liver and intestinal affections, to diarrhœa, and dysentery, and to cutaneous diseases.

At Mentone the winter temperature in the shade is generally below 60°, but the air is usually dry, and this is no doubt the reason catarrhal affections are rare. Whenever the weather is both cold and damp, colds are caught at Mentone as elsewhere, but they generally die away as soon as the dry sunshine returns, even if the thermometer remains low. Those who enjoy the greatest immunity are those who keep their rooms cool and well ventilated day and night. Those who make large fires, who close their windows hermetically, and avoid every breath of air, are precisely those who suffer the most in this respect. I may instance the Germans and Swiss, who, accustomed at home to shut every crevice, and to treat the external air as an enemy, generally follow the same plan at Mentone, and suffer accordingly.

One of the most convincing proofs of the healthiness of Mentone is the general absence of severe accidental disease. During my fifteen winters' residence I have seen but very little of the diseases usually met with in the south of Europe—fever, malaria, dysentery, or of any serious malady attributable to external causes. Indeed, I have been principally consulted for the diseases and ailments that the invalids brought with them. This is the more remarkable when we consider that in many large continental health towns, such as Naples, Rome, Malaga, a considerable proportion of the foreign physicians' duties consists in attending their countrymen for maladies of the above-mentioned character.

To derive that benefit, however, from the climate of Mentone, and of the south of Europe generally, which it is capable of affording in disease, and especially in pulmonary consumption, the most rigid adherence should be paid to the hygienic rules necessary in these regions during the winter season. It should never be forgotten that in winter the heat is sun-heat, and that the air, barring its influence, is usually cold. Warm clothes and woollen outer garments should be used. In dressing for out of doors, a thermometer, placed *outside a north room,* should be daily consulted.

Those who visit the south for the first time often think that summer clothing only is necessary, and that warm clothes and great-coats may be discarded. I have even known physicians at home, who should have been better informed, tell their patients so. Never was there a greater mistake; summer clothes are useless from December to May. Those required are the light but warm woollen clothes we wear during our cold spring and autumn, with light over garments. The latter can seldom be safely dispensed with, even on the sunniest and warmest winter days, on account of the great difference between the sunshine and the shade. We may take a lesson from the native gentlemen, who, whenever it is not absolutely warm, cover themselves up to the chin with heavy cloaks.

If these rules are not observed, if warm woollen clothes are not constantly worn, and even warm flannel or merino vests next the skin, rheumatic pains often attack the strong as well as the weak, and more especially those who are advancing in life. Indeed, I question whether, in the south of Europe, in winter, it is not as difficult to keep free from rheumatic pains as it is in the north. The heat of the sun in the day makes northerners thoughtless about outer garments, whilst the least exposure to the cool dry air which reigns for months may be followed with this penalty. Attendance at church is a fruitful cause of rheumatism and colds. If the church is warm, people catch cold on going out. If it is cool, they nearly all come much too lightly dressed for sitting still a couple of hours "in their Sunday best," and often return home with sharp pains, which they

try to account for by imaginary draughts. I myself wear, in all weathers, a thick woollen Inverness cape, such as I should wear in Scotland, and that throughout the winter; it is an admirable garment for such a climate.

This tendency to rheumatic pains is not peculiar to the Riviera. It exists, in winter, all over the south and the east, in Italy, in Spain, in Egypt, in Algeria, and even in the Desert of Sahara. The Bedouin Arabs, in winter, with the thermometer at 80° or 90° in the daytime, swathe themselves up in woollen garments and woollen cloaks, for rheumatism is their enemy as well as ours.

Although rheumatic pains are common, rheumatic fever is rare. I have seen, it is true, several cases, but it has always been early in the winter, in persons who evidently brought the blood predisposition with them. The free action of the skin, in this climate, probably tends to purify the blood and to render rheumatic fever uncommon. It is not by any means a frequent disease among the natives, although muscular rheumatism, on the contrary, is very common, owing, no doubt, to exposure and to insufficient clothing.

As might be anticipated, such a climate is favourable to gout, and I have known many gouty persons enjoy a happy immunity from habitual suffering. Sharp attacks of gout, however, may occur here as elsewhere, in those who are liable to them, especially soon after arrival from the North. The free and constant action of the skin is favourable to the gouty as well as to the rheumatic.

The hours for out-of-door exercise should be between nine and three or four, and the return should be so arranged as to secure the arrival at home before sunset. Italian physicians appear to attach a mysterious and noxious influence to the hour of sunset. In such a climate as that of Mentone and Nice, I am persuaded that the danger is in the rapid lowering of the temperature at that time, which exposes to sudden chills, the pores of the skin being often open at the time through previous exercise. This sudden chill in southern climates is no doubt alone sufficient to produce fever of the intermittent type, without any malarious agency. It is because the same danger exists

even in midday, in passing accidentally from the sun to the shade, that it is always necessary to be dressed for the latter.

The invalid should inhabit a south room, and not remain long in a north room unless the weather be warm, or unless it be warmed by a fire. The one is summer, the other winter. When the weather is bad, he or she should make a good fire, and scrupulously stay at home in well-ventilated rooms until it changes. Sunshine and warmth are sure soon to reappear, and thus to bring the confinement to a close. After several days of chilly rain, as already stated, sore throats, colds in the head, coughs, and rheumatic pains begin as in England; but then the sun again shines, and they usually at once die away. All dinner and evening parties should be strictly forbidden to invalids. They should be in before sunset, and not leave home again until the following morning, throughout the winter.

Lastly, exercise and out-door life must not be carried so far as to produce permanent lassitude. Many of the most confirmed invalids fall into this error—one easily committed—owing to the great attractions of out-door life, to the all but constant fine weather, and to the injunction generally made to take daily exercise, if possible.

This last remark applies more especially to consumptive patients. Physical debility is a more ordinary accompaniment of phthisis than is generally supposed, and when it exists much exercise is decidedly pernicious. In some cases, indeed, scarcely any exercise can be taken without impairing the digestion of food, and thus producing sleeplessness and extreme lassitude, a fact not generally known, even by physicians, and clearly a result of the organic cachexia connected with the disease.

During the fifteen winters I have passed at Mentone, constantly surrounded by consumptive patients labouring under every stage of the disease, I have become more and more convinced of the truth and importance of this fact. Those who do the best are those who accept their position cheerfully, who secede entirely from the valid part of the population, from their amusements and occupations, and are content to lead a quiet, contemplative existence. Happy

are they if they can find pleasure in books, music, sketching, and the study of nature; if they can be satisfied to spend their days in the vicinity of the house in which they live, and to sit or lie for hours basking in the sun, like an "invalided lizard on the wall," following implicitly the medical rules laid down for their guidance. Nearly all the best cases I have met with have been among such. Those who have no mental resources in themselves, who are miserable unless engaged in active pursuits, fare the worst, both in body and mind. They do not resignedly accept the forced inaction their disease entails upon them, are discontented and restless, constantly commit imprudences for the sake of amusement, and over-tax their strength by endeavouring to participate in the pleasures and pursuits of the healthy and strong.

A good plan for the invalid is to walk, ride, or drive to one of the many romantic regions in the neighbourhood—to Roccabruna, the Cabrole valley, the Cap Martin, the Pont St. Louis, the Nice, or Genoa Road, or, on calm days, to the picturesque rocky beach—to take the cushions out of the carriage, if driving, with a cloak or two, and to remain sitting or lying in the sunshine, in some spot sheltered from wind, for two or three hours. The range of observation is thus increased without fatigue, the glorious scenery of the district is seen and enjoyed in its ever-varying phases, and the mind is refreshed by change.

On fine days, when the sea is calm, boats also can be had for a sail or a row, and air and exercise obtained without fatigue. Those who are equal to a sail and a drive the same day can, according to the wind, sail east or west along the coast as far as Ventimiglia or Monaco, distant, the one seven, the other five miles. They can then land and return by means of a carriage sent on from Mentone to meet them. The view of the mountains thus obtained from the sea is truly magnificent. Indeed, it is only from the sea, as I have stated, that the grandeur of the mountain and coast scenery can be truly appreciated.

With the above precautions, the climate of Mentone, and of the south of Europe generally, is safe and beneficial; without them it is unsafe and treacherous. This is evidenced

by the great winter mortality of the natives of the Nice and Mentone districts, and of Italy and Spain generally, by pneumonia and pleurisy, two of the commonest maladies. Being badly clothed, never making fires, and ignorantly braving the atmospheric changes, the lower orders are constantly exposed to chills, and succumb in numbers to these diseases, treated, as they are in Italy, by bleeding every few hours. Persons in the latter stages of phthisis more especially suffer from the slightest dereliction of the above rules, which they are not always the most careful to follow. Indeed, I have no hesitation in asserting that the improvement of the phthisical invalid depends as much on close attention to these injunctions as on the medical skill of his attendant, and that it is the more decided the more faithfully they are observed.

One great advantage of the dryness of the atmosphere, and of the absence of severe cold in the night, is that bed-room windows may be left open, more or less, without risk of any kind, throughout the winter, and thus perfect night ventilation of the bed-room can be attained. This is a most important point both for the sound and the unsound, but more especially for invalids and for those who are suffering from pulmonary consumption.

Invalids should invariably sleep in a south room, as they thereby insure a mild and equable night temperature throughout the greater part of the winter, even with the window open. The same rule, however, does not apply to those who are sound, or to those who have in a great measure recovered health.

In south rooms, saturated all day by warm sunshine, the temperature seldom falls at night below from 56° to 60° Fah., owing, no doubt, in part to the radiation of heat from the walls. In north rooms, on the contrary, the temperature approximates much more to that of the external atmosphere, unless raised by fire. With the window slightly open, it will generally range from 50° to 56°, according to the coldness of the night. This is a much more wholesome state of things for the healthy, as a moderate degree of cold at night braces and invigorates the system. The warm bed-room is a debilitating hothouse to

persons in health. Indeed, a lower temperature by night than by day is indicated by nature. It is found necessary for the well-being of plants in all stoves, hothouses, and conservatories, and was evidently intended by an all-wise Providence, which only turned the earth toward the sun for a portion of the twenty-four hours.

In concluding these remarks on the medical characteristics of the Riviera climate, there is one important fact to which I would more particularly draw attention. Continued and careful observation during a long series of years has led me to the conclusion that the benefit to be derived from a winter residence in this favoured part of Europe, or in any other healthy locality, is not always obtained at once; sometimes not even the first winter.

Confirmed invalids bring their constitution with them. As the Latin poet says—

"Cœlum, non animam, mutant qui trans mare currunt."

The illness under which they suffer has probably been the result of pernicious influences, constitutional, social, climatal, which have been in operation for many years. The entire organization is unfavourably, morbidly modified. Even if the locality and climate chosen are the very best that could possibly be found, it is unreasonable to expect an immediate or sudden change. Yet it is what most invalids do expect; and, owing to their ignorance of this fact, they often feel disappointed, and express themselves so, when time passes and but little apparent benefit is experienced.

In reality, in confirmed progressing disease, not to get worse, merely to remain stationary, may be evidence of the success of the means used, the evidence of real improvement. If a train is rushing furiously into some danger, and the guard and engine-driver put down the breaks and reverse the engine, the train does not stop all at once. It continues its progress for a time, notwithstanding the most judicious and efficient steps to arrest it. When it yields to control at first it remains stationary, and later, only, begins to retrace its steps.

So it is in disease; its onward progress has first to be

checked. Change of climate, the removal of all disturbing, pernicious influences, may not apparently tell at the outset, although they may be silently, quietly exercising the desired and anticipated influence. Then comes the stationary period, and only later still—in pulmonary consumption often not until the second or third winter—the real, undoubted improvement.

I have watched many sufferers for successive winters, and have thus had the opportunity of judging comparatively. Unquestionably the most satisfactory cases of arrested and of cured phthisis that I have seen, have been among those who have had the power and the will to return again and again; who have adopted one of my mottoes, *vivendum est*, "to be or not to be," and have cheerfully made every possible sacrifice of family ties and of social position and duties, in order to give themselves a fair chance of life.

The health of the native population is exceptionally good. According to the late Dr. Bottini, in his work entitled "Menton et son Climat," this much regretted physician, who had practised more than a quarter of a century in the district, says that the average duration of life is forty-five years, an average far above that of the town population of the south of Europe in general. He also states that a large proportion of the older inhabitants of the district attain to above seventy years of age. This is the more remarkable, as the houses of the old town are crowded, one above the other, in a most unhygienic manner. But then they are built on a very steep acclivity, so that nearly all enjoy light, air, and sunshine, notwithstanding their extreme proximity to each other. Moreover, the streets, although narrow, are clean, owing to everything that can be turned into manure being carefully preserved, and carried off to the mountain terraces.

The diseases under which they suffer present nothing peculiar beyond a tendency to scrofula and chlorosis in the young, which may be attributed to a low vegetable diet. Gout is all but unknown, rheumatic fever rare, as already stated; indeed, it is seldom seen except in persons recently arrived, although muscular rheumatism is common. As a general rule, intermittent and remittent fevers,—that is,

malarious fevers, are all but unknown. A few years ago, however, for two summers there were many cases. This is a very singular fact, difficult to account for on the marsh theory, as there are no marshes or plains whatever in the district. Some of the cases occurred in mountain villages such as Grimaldi, perched on the rock side 700 feet above the sea. The manifestation of intermittent fever in such a locality seems to me a proof that in certain electrical and thermometrical conditions of the atmosphere these fevers can be generated without marsh miasmata, by mere chills, when the economy is predisposed by previous intense heat. In Corsica and Algeria I found intermittent and remittent fever to exist everywhere, on high mountains as well as on plains, although undoubtedly much less frequent and severe on the former. It is certainly singular that malarious fevers should be little observed on the Riviera when they are so rife and deadly on the opposite coast of Corsica. The probable cause is the equability of the day and night temperatures, but I shall discuss this question at length in another chapter, that on Corsica.

The sick poor are attended by physicians and surgeons appointed and paid by the town or district. These gentlemen are the medical and surgical attendants of an hospital, erected in the angle of the eastern bay a few years ago.

Pulmonary consumption is a rare malady among the native population, the deaths from this cause being only one in fifty-five instead of one in five, as in London and Paris, and one in six at Geneva. Those whom it attacks are all but invariably people who follow sedentary pursuits. The disease is nearly unknown among those who work in the open air. It is a well established fact, that although tubercular disease is more common in cold, damp climates, like that of England, Holland, and the north of France, it can be and is developed anywhere, by defective ventilation, the want of light, bad food, and overwork of body or mind. All these causes are united in many of the unhealthy towns of the south of Europe, and in all such consumption is more or less rife. To prevent or arrest it, not only do we require a favourable climate, but also every hygienic condition and precaution. Thus, in Naples, a very

unhygienic southern town, the deaths from phthisis are one in eight; at Marseilles, where the hygienic conditions are, or used to be, still worse, the mortality from this cause is, or rather was, as great as one in four. This fact will surprise no one who has made a journey of discovery in the old quarters, before the recent improvements. The town of Marseilles, however, is being regenerated.

Notwithstanding the heat of the summer, liver affections are rare, as also is dysenteric disease. The cool weather of autumn arrives sufficiently early in November to check the tendency to abdominal and intestinal disease produced by the warmth of the summer and autumn. Asiatic cholera has never appeared at Mentone, a rather singular fact, as it has exercised considerable ravages on most other parts of the Riviera.

This all but total absence of actual dysentery at Mentone is a strong evidence of the healthiness of the district, for the summer and autumn heat are certainly quite sufficient to predispose to it were other conditions favourable to its development. There is, however, a most remarkable connexion between dysentery and the intermittent and remittent fevers known as malarious. They are met with in the same regions, and under the same conditions, and appear often to take the place one of the other. Thus, the general immunity of the Mentone district from malarious fevers may be said to explain its general immunity from dysentery. Bilious diarrhœa, bordering on dysentery, is not uncommon in the autumn, especially with invalids who arrive too early. The last ten days of October is quite early enough for arrival, and the first week of May is quite early enough for departure.

CHAPTER VII.

MENTONE IN ITS SOCIAL ASPECT.

AMUSEMENTS—DRIVES—RIDES—PEDESTRIAN EXCURSIONS—MOUNTAIN VILLAGES—CASINO—CHURCHES—SOCIAL LIFE.

"Ah! what a life were this, how sweet, how lovely!
Gives not the hawthorn bush a sweeter shade
To shepherds looking on their silly sheep,
Than doth a rich embroidered canopy
To kings, that fear their subjects' treachery?
O yes, it doth; a thousand-fold it doth."—SHAKSPEARE.

SINCE the first edition of this work was published, in 1861, Mentone has quite changed its character. It was then a quiet little Italian town on the sunny shore of the Riviera, with two or three small hotels, principally used by passing travellers, and half a dozen recently erected villas. Now it has become a well-known and frequented winter resort, with thirty hotels, four times that number of villas, and a mixed foreign winter population of above sixteen hundred. Many of these winter visitors are invalids in search of health, but a large proportion are mere sun-worshippers, who have left the north to bask in the southern sunshine, or travellers to or from Italy, glad to rest for a time under the Lemon and Olive-clad hills of lovely Mentone. Its resources for visitors, however, are still principally in picturesque outdoor life. The scenery is most grand and imposing in the mountain background, most picturesque and romantic in the nearer hills and coast outline. Every ravine, every valley is a path of great loveliness, ascending gently towards the higher range. The flora is very abundant, and, as we have seen, most of our garden spring flowers grow wild in great luxuriance. The geological aspects of the country are also very instructive, and afford constant

occupation and amusement to those interested in such pursuits.

The great invalids, if prudent, mostly keep to the drives and walks along the seashore. Those who are stronger, mounted on sure-footed donkeys, ascend the mountain paths as far as their strength permits; whilst the robust and valid members of the community try their pedestrian powers by ascending the higher mountains in various directions. Whenever the sun shines there are protected valleys and sunny mountain nooks, where at all times, in December or January, as well as earlier and later, warmth, a quiet atmosphere, and flowers are sure to be found. What with these occupations, books and papers and the harmonious intercourse of countrymen united by the bond of common origin, the winter passes pleasantly; merely saddened, occasionally, by the final departure of some hopeless sufferer.

Although the Mentonian amphitheatre is limited, as described, it is sufficiently extensive to offer all but endless excursions to visitors, ill or well, and more especially to pedestrians. The protected valleys and hills are very numerous, and within the reach even of the invalid population. Once, also, the higher barrier of mountains has been passed, a perfect Switzerland opens out to the adventurous and to the valid tourist.

Within the immediate area of the Mentone district there are other points of interest besides the valleys and hills. The drives are very picturesque and lovely in their entire extent, and are all within the peculiar shelter of the locality. They are: the beautiful western or Nice road to Roccabruna and the Turbia; the equally beautiful eastern or Genoa road to Ventimiglia and Bordighera; the charming road along the shore to Monaco; the road to the Cap Martin, to its bold, broken, rocky point, to the ruins of the old convent in the centre, and to the telegraph tower; the mountain pass road up the Carei valley, which winds over the mountains to Sospello and Turin; and lastly, the road that leads along the Cabrole valley to the foot of the St^{a}. Lucia and St^{a}. Agnese mountains.

The first-mentioned drive, that to Roccabruna, Turbia, and Nice, has already been described. It is the road the

Paris. Imp. Monrocq.

THE MENTONE AMPHITHEATRE.

Paris. Imp. Morocq.

stranger passes along on his arrival at Mentone from Nice, and is so exquisitely beautiful that it generally remains the favourite excursion, even during a residence of many months. Two hours are required to gently ascend the mountain side from Mentone to Turbia, at the summit of the pass. During the entire ascent the road is thoroughly sheltered from the north, and steeped in sunshine until the sun descends behind the mountains on the western horizon. The return only takes one hour, or one and a half, according to pace. The village of Turbia, which crowns the pass, is a landmark in history. It was the frontier between Gaul and Liguria in the time of the Romans, and there is still to be seen near the road the very interesting ruins of a tower built by the Roman emperor Augustus, nearly two thousand years ago. These ruins show well in what a massive style military works were constructed by the Romans, and are quite worth a special visit.

The Genoa road, which skirts the coast, is, as I have stated, equally beautiful. It begins to ascend at once on leaving the eastern bay, passing over the picturesque bridge and ravine of St. Louis. Above this it is positively blasted out of the side of the limestone rock.

In cold weather, the invalid should not go beyond the turn or highest point of this road, as there is a cold gorge beyond. But on a fine warm day the drive may be prolonged along the coast to Ventimiglia, a quaint old fortified town, with a fair-sized snow-formed river, the Roya, which descends along a picturesque and wide valley from the foot of the Col de Tende. Ventimiglia is seven miles from Mentone; and Bordighera, where the Palm trees are met with in all their glory, is four miles further. On the return, if "imprudently" made towards sunset, a most glorious view is obtained when the highest part of the road is reached near Mentone. The entire amphitheatre is beautifully seen, and the setting sun behind the Esterel mountains reveals their sharp outlines, the isle St. Marguerite at Cannes, and the lighthouse at Antibes, as distinctly as if only a few miles distant, instead of fifty. They are clothed also, in the most magnificent colours, purple, crimson, and red.

"But lo! the sun is setting; earth and sky
One blaze of glory:
He lingers yet; and lessening to a point,
Shines like the eye of heaven—then withdraws;
And from the zenith to the utmost skirts
All is celestial red."—ROGERS.

The drive to Monaco, about five miles along the coast, at the foot of the mountains, is certainly one of the most beautiful in Europe. It winds along the shore following the indentations of the coast; at one moment all but level with the beach, at another rising more than a hundred feet above it.

On the land side are mountains, ascending rapidly many hundred feet above the sea, hoar with age, rent and torn in every conceivable shape. Sometimes huge rocks that have been riven from the parent mountain by nature's agencies, hang above the road as if about to fall on the traveller; or they have actually fallen, leapt over it, and lie in wild confusion underneath. In one spot, where an avalanche of this kind has descended from on high, there is a rock as large as a small house, arrested in its downward progress by the trunk of an old olive tree. The veteran appears to be bravely endeavouring to stem the descent of its enemy, and so far has succeeded.

On the Mediterranean side are quiet coves and bays, where the waves ripple gently on sandy beaches, at the foot of jagged, capriciously shaped rocks, covered with pines and brushwood. They appear indescribably lovely from the road, and inspire the wayfarer with an all but irresistible desire to stop his progress, in order to bathe, or to sit leisurely on the shore watching the play of the briny waters.

Both going to Monaco and returning, from early morn to evening, this lovely road is steeped in the glowing sunshine of the south. Being thus sheltered and in the sun all the way, it can be resorted to whenever the wind does not blow from the sea. Monaco, a little town perched on a rocky peninsula all but surrounded by the sea, is itself very interesting. It is a calm and lovely spot on a fine sunny day, with its pretty little port, all but rock-sur-

rounded, clear and blue, enlivened only by a few fishing-boats.

The railway from Nice to Genoa has now been open for some time, and a small steamer that used to ply between Nice and Monaco has ceased to run. Few will trust to the faithless, capricious deep who can avoid it, and yet on a fine day it is a most enjoyable mode of reaching Nice. The railway from Nice to Mentone was a most difficult and expensive undertaking, and occupied several years. It passes through nine tunnels, and skirts deep bays and indentations of the coast on sea walls and causeways, at the foot of which the sea breaks constantly. The coast is very lovely, and, in my eyes, the railway, convenient although it be, rather mars its beauty. Nature seems to have been wounded, scarred, interfered with in every sense. She will soon, however, obliterate the scars she has received with wild plants and with southern verdure, and then we shall perhaps learn to look upon the line merely as a messenger of progress and civilization. At the time of the annexation the French Government promised to construct a port at Mentone, and is now redeeming its promise; a pier is being thrown out beyond the old Genoese castle. The latter is built on a rock in the sea at the point of the promontory on which the town stands. This pier, although only half finished, already protects and improves the port and anchorage, and facilitates the loading and unloading of the vessels that come to Mentone.

Mentone and the village of Roccabruna formed a part of the principality of Monaco from the early Middle Ages. The Princes of Monaco held their small principality as feudatories of Piedmont, and although swept away by the French Revolution, were recognised in their former rights at the Treaty of Vienna. Their authority, however, was harshly exercised, and in 1848 Mentone and Roccabruna made a small revolution in imitation of France, drove the Prince away, and declared themselves independent. The happy independence thus gained, with Arcadian immunity from taxes or conscription, they enjoyed until 1860, when the Prince of Monaco ceded his rights over his revolted subjects to the Emperor of France for the sum of 120,000*l.*

Monaco, his faithful city of six hundred inhabitants, he retained as the capital of the diminished principality, under the jurisdiction of France.

The old city of Monaco is built on an elevated promontory, and from its advancing considerably into the sea, beyond the coast line, it is rather too much exposed to the mistral or north-west wind to be an agreeable winter residence. It was well known to the Romans, is often mentioned by classical writers, and has had a little history of its own throughout the dark and Middle Ages. Its princes have been small kings on their sea-girt rock, and have often waged war, under the wing first of one powerful protector, then of another. The Sardinians, the French, the Genoese, have all in turn been allies or foes, until at last a real annexation to France has taken place. By a treaty made with that country, the customs and criminal jurisprudence have been surrendered, as well as Mentone.

The late French Emperor, however, allowed the Prince of Monaco to retain his gaming establishment, although none were permitted in France, and that when the German Dukes were about to abandon this source of revenue. But the oranges, the lemons, and the oil, are nearly gone with Mentone and Roccabruna, and the Princes of Monaco do not feel disposed, it may be presumed, to abandon the motto imputed to them of old:

> "Son Monaco sopra un scoglio
> Non semino e non raccoglio,
> E pur mangiare voglio."

The temptation afforded by the large income derived from this source was too great to be withstood, and now that all the German gaming-houses are suppressed, Monaco reigns supreme as nearly the only gambling establishment in Europe, and certainly the only one carried on in the princely style of Homburg and Baden in former days. M. Leblanc, the present lessee, has spent an immense sum of money in building a beautiful casino on the model of the one at Homburg, several first-class hotels, and many elegant villas, in the most protected situations. These buildings have all been erected in a picturesque spot, on the

east side of the port, about half a mile from the town. Thus the promontory on which the town of Monaco is perched shelters the new gambling colony, in a great measure, from the north-west wind, to which the town itself is exposed. M. Leblanc is spending regally a portion of his income in improvements of every kind—roads, bridges, terraces—and is showing much more taste in his erections, and in the arrangement of the lovely grounds around the casino, than the Mentonians have as yet exhibited. But then his means are very great, for he levies tribute on a large community, the gambling population of Europe. The garden is beautifully planted and laid out, and the terraces facing the sea are covered with shrubs and flowers that flourish and bloom in winter. Certainly, under his auspices, Monaco has become a fairy-land, and it is lamentable to think that so much loveliness should originate in such a source.

The band plays twice a day, from half-past two to four, and from half-past eight to ten. It is composed of seventy-four thoroughly good musicians, selected from Germany and Italy, and discourses really "sweet music" in a noble music-hall or ball-room. It is a great treat to listen to so admirably led and so well-trained an orchestra, in this out of the way place, and it is a pleasure we Mentonians can enjoy when we like. The drive takes about an hour at an easy pace, but by rail it is only ten minutes.

On a fine sunny winter's day it is a most charming excursion to drive over to Monaco, to lunch at the luxurious Hôtel de Paris, or *al fresco* in pic-nic style on the road; to saunter over the gardens, to listen for an hour to the fairy-like music, and then to return leisurely home, before sunset chills the air. The drawback is the idea that always haunts one, that the vice of gambling should be the means of placing these quiet, health-giving pleasures at our disposal. I try, when I go there, which I often do for the sake of the flowers and the music, to forget all about it, and with that view seldom or never enter the gaming saloons. I never recommend any one to settle at Monaco, for I cannot but think that the immediate proximity of a gaming table, in the absence of all active occupation, is dangerous

to many who would never positively seek its excitement and risks. Moreover, the company, male and female, is very bad in the evening. The four o'clock afternoon train from Nice brings daily a crowd of loose characters.

The Cap Martin, a semicircular peninsula, covered with an Olive grove in the centre, and a protecting Pine forest on the coast margin, is another charming drive. It forms one side of the western bay, and is a most picturesque and attractive spot. The road branches off from the Nice road near the town, passes through an Olive grove of fine, curious old trees, and then divides into two. The one, after passing by some pretty orange orchards, skirts the shore, fringed with irregular, water-worn rocks, blanched by the waves which the south-west wind drives on them with extreme fury. When there is a storm from the south-west or south-east, it is a magnificent spectacle to watch the sea dashing violently on the sharp, jagged masses of limestone, and breaking into dense masses of foam and spray.

At the extremity of the cape, just as the seashore road begins to turn and to ascend, there is a little sheep track, that winds round the promontory, above the sea, at the foot of the steep myrtle-covered cliffs; and amidst the confused, irregular mass of rocks which line the shore there are various little warm and lovely coves. This path is, without any doubt, one of the most delightful spots in the district for the quiet contemplation of nature's sterner beauties. The time to spend an hour or two here is in the afternoon, when the sun, passing to the west, pours its warm rays on this, the western side of the cape. An intelligent survey of the wilderness of rocks will reveal a hundred nooks worthy of an emperor's siesta.

The other branch of the Cap road ascends to the higher ground of the promontory, and leads, through lovely woods of Olive and Pine, with a brushwood of Myrtle, Lentiscus, prickly Broom, and Thyme, to some old ruins, said by some to be Roman, and by others to be the remains of a convent. Near them is a telegraph tower, which the electric wire has rendered useless.

Both these roads afford at every step magnificent views

of the Mentonian amphitheatre, of the grandiose mountains that form it, and of the bold and irregular coast line as far as Bordighera, some twelve miles off. Bordighera, built on a promontory which advances out to sea in a south-eastern direction, is a very prominent object from every part of the coast as far as Antibes. It gives at a distance the promise of greater beauty than is realized on a closer inspection.

The Turin road (see local map) ascends the deepest and longest valley in the amphitheatre—that of Carei, at the entrance of the town. The ascent begins about a mile from the shore. It is for some distance very gentle, until a mile beyond the village of Monti, when it begins to climb the side of the mountain by a terraced, engineered causeway, like one of the great Swiss passes into Italy. This road, only recently completed, reaches the summit of the pass, about three miles from the shore, at an elevation of 2400 feet. It then passes through a short tunnel, descends and joins the road from Nice to Turin by the Col de Tende at Sospello, the second stage from Nice. The Mentonian amphitheatre is thus now in free communication with the highland regions that surround it, and from which it had hitherto been cut off by its mountain barrier. Supplies of forage, and of mountain produce generally, now easily get to Mentone by road carriage, whereas formerly they could only reach by mules, or round by Nice.

Moreover, a beautiful and interesting highland district has become accessible throughout the winter, not only to hardy pedestrians, as heretofore, but to all strangers and invalids capable of prudently leaving the protected regions and of spending a few hours in a carriage. This part of the Maritime Alps contains many places of interest, many picturesque localities, which can be visited by all but the more confirmed invalids during a great part of the winter. Even the invalid visitor is now able to penetrate beyond the mountain barrier in the autumn, before severe weather has set in, and in the early spring, in April and May, when the reign of winter has ceased in these southern mountains.

The last named drive is along the Boirie or Cabrole valley. This road, a remarkably good and nearly level one, is about a mile and a half in extent. It skirts a mountain torrent, which occupies the very centre of the Mentone amphitheatre, and which carries to the sea the watershed of a considerable extent of the surrounding mountains. When I first knew Mentone there was no bridge over this torrent, where it throws itself into the sea, near the entrance of the town, and after heavy rains it was sometimes so swollen as to intercept all communication for many hours. A new bridge has been built, so that here, at least, travellers will no longer have to wait "until the river runs dry," for we could never say with Horace,

> "Rusticus exspectat dum defluat amnis; at ille
> Labitur, et labetur in omne volubilis ævum.

The view of the mountains from this valley is magnificent, for we are at their base, in the very heart of the amphitheatre. No winds ever penetrate, not even the sea breeze, the valley describing an angle which effectively shuts it out. The railroad station has been erected at its entrance in the midst of lovely mountain scenery. At the termination of the carriage road there is a picturesque olive mill, and beyond a romantic pathway, which extends for another mile, meandering among Olive and Pine groves, until it reaches the small village of Cabrole, at the head of the valley.

About the centre of that portion of the valley which is occupied by the carriage road the torrent receives a tributary from the west, bringing the waters of one of the prettiest sandstone ravines of the district. It is called the Primrose and Hepatica valley, owing to the presence of these flowers in profusion in early spring. Both the Cabrole and the Primrose valleys are invaluable to the invalids of the western bay, offering a safe retreat from every wind, sunshine, and the most wild, beautiful scenery. Being within half a mile of the entrance of the town, they are as accessible to pedestrians as to those who ride or drive.

Strangers have to learn how to enjoy these drives. The plan that I recommend is not merely to drive to a point and then back again, but, once the general features of the

country have become familiar, to make use of the carriage or Bath-chair or donkey merely to reach the most sheltered and picturesque part of the region selected. Then it should be abandoned, in order leisurely to explore on foot the romantic mountain paths and the charming woodland nooks that can only thus be reached. If unequal to such an exertion, the invalid can recline in some chosen spot, lazarone fashion, on the ground, in the sunshine. With the help of rugs and cloaks, or of the carriage cushions, a comfortable encampment may be made, in which an hour or more passes very swiftly in the enjoyment of the felicity so eloquently described by Shakspeare in the verses at the head of this chapter.

Should even this be too great an exertion, the carriage can be stopped in some exceptionally lovely spot, turned so as for the hood to afford protection from the sun or wind, the invalid made comfortable, and then the valid members of the party can depart for a stroll.

No one need be afraid of thus reclining on the ground, as there is an entire absence at Mentone of all animated creatures of a venomous nature, with the exception of mosquitoes. There are, it is true, little black scorpions, but they seem to hybernate in winter, and are only found by those who look for them under the bark of decayed olive trees. In April, not before, serpents appear on very warm sunny rocks and sites, but they belong to the harmless species of the "collubra," as in England. No other species, not even vipers, are known to exist. There is a small flat-headed ugly lizard which the peasants consider venomous, and destroy when they find it. I saw one of this identical species in Africa among the ruins at Carthage, and was told by my dragoman that it was decidedly venomous. The Nice naturalists, however, deny that it is so, and say that the popular idea is a fallacy, founded on its really repulsive appearance.

The possibility of being thus able to lie, basking in the sun, on the ground or on the rocks, in sheltered sunny nooks, most days throughout the winter, is, I consider, one of the greatest advantages to health that the Riviera offers; not but that it is always prudent to have a cloak, a rug, or

cushion underneath, and to use a good sunshade or parasol as a protection from glare and wind. By this means many hours may be passed out of doors on most days without fatigue. It is an amusement and a pleasure to look about for these sunny nooks, to find olive trees slanting in the required direction, so as to form a comfortable support to the back. Once found such spots become favourites, and are remembered.

After some hours of such repose we rise refreshed, renovated by contact with the earth, eat better and sleep sounder. We are like the Titans in former days, the sons of the earth. When fighting with Jupiter they were repeatedly hurled to the earth, their mother, but each time they touched her they were endowed with fresh power for the fight; certainly the allegory conceals a truth. Or, a more modern and "scientific" theory may be adopted; we may assume that we imbibe directly some of the earth's electricity, her vital fluid, and are thus directly vitalized.

Quiet communion with nature is infinitely preferable to long fatiguing drives, and contributes much more to the improvement of health. A carriage used in this way gives an invalid the command of all the most beautiful scenery of the district, and I strongly advise all who can afford it to engage one for the season, the more so as carriages are both difficult to obtain and dear if taken for a day or a drive, just as in small country towns in England. Engaged by the month or season they are not more expensive than in Paris or London. A comfortable open carriage, with two horses, can be had, from either Mentone or Nice, for about thirty pounds or guineas a month, including the driver, and all expenses. There are now very tolerable hack cabs, open and shut, standing for hire, at a fixed tariff, opposite the Casino or Club in the town, but their rates are high, and the drivers are difficult to control, as they wish to be employed for the day. An omnibus runs from one end of the town to the other, at stated hours.

Horses are but little adapted to the mountainous character of the country, and are so little patronized that they are not easily attainable. They may, however, be obtained from Nice by equestrians who are stationary long

enough, and are strong enough, to make it worth their while.

Donkeys are the usual means of ascent to the picturesque mountain valleys and ridges; mules are but little used. The able pedestrian commands the entire Mentonian amphitheatre; but it is not so with the invalid, with ladies, children, and the weak generally. The ascents are often winding and steep, the roads mere broken tracks, and were

THE DONKEY WOMAN.

it not for the donkeys, much of the most wild and picturesque scenery would be all but inaccessible to the invalid population. These animals are numerous, as every peasant, the owner of a few mountain terraces, keeps one as a beast of burden. Donkeys are as peculiarly suited to a rugged mountain district as the camel is to the desert. At Mentone they are mostly fine, handsome animals, and more than usually docile and good-tempered, probably because they are well tended and treated with affection and kindness,

instead of with contempt and brutality. The peasants always guide them by the voice, not by blows. It is interesting to see the self-possession and security of foot with which they descend the most precipitous paths, at one time sliding, as it were, on their haunches, in steep places, at another skipping like kids, although heavily laden. The donkey women are only the owners of the saddles, hiring the donkeys from the peasants. Hence the necessity of

THE DONKEY BOY.

bespeaking the donkeys over night, otherwise they are off to the mountains by early morn.

The views are everywhere perfectly magnificent. The most beautiful and those that give the best idea of the district are those from the Cap Martin, and from my garden and rocks at Grimaldi. Although in my travels I have now all but encircled the Mediterranean, I have nowhere found any scenery that can be compared to them, with the single exception of the Dalmatian coast, as viewed from Corfu on a fine sunny day. But beautiful as it is, there is not the great variety of mountain heights presented

by the Mentone amphitheatre. I have been told that the scenery at Mentone is very like that of Madeira, only at Mentone there are several miles of level coast road along the sea-shore, which at Madeira are wanting. To get a thoroughly good idea of the district the stranger should take the drives which I have described, and then make an excursion on foot, or on a donkey, to the mountain villages of Roccabruna (one hour), Castellare (one hour and a half), Gorbio (two hours and a half), and Stª. Agnese (three hours). The first can be reached in a carriage, the others only on foot or on donkeys. Stª. Agnese, the most remote, is situated at the summit of the first back ridge.

Roccabruna, Castellare, and Stª. Agnese are mountain villages, founded by their inhabitants, ages ago, on account of the facilities they afforded for defence. Roccabruna is about 800 feet above the sea; Castellare 1200, and Stª. Agnese 2400.

Until a recent period, the adjacent shores, and indeed those of the entire Riviera, were exposed to the constant attacks of the Mahommedan pirates of the south Mediterranean. For many centuries it was the Saracens, later the Turks and Moors of Tunis and Algiers, who periodically ravaged these coasts. Their forays were not for wealth, which the poor fishermen and labourers did not possess, but for slaves; for the women were handsome, and the men strong. To withstand these attacks, the inhabitants of the towns chose defensible situations, such as the steep promontories and eminences on which Monaco, Esa, Mentone, Ventimiglia, and San Remo, are situated; fortifying themselves also with strong walls. The agriculturists sought safety by perching their villages on all but inaccessible heights, whence they could see their enemies approaching, and where they could easier defend themselves if attacked.

There are still men alive at Mentone, who, in the early part of this century were seized on the coast by the Moors, and subsequently lived for years as slaves at Algiers and Tunis. That such should be the case is not surprising, when we reflect that piracy reigned supreme in the Mediterranean until the year 1816, when Lord Exmouth bombarded Algiers, and that it was not finally extinguished

until the French took possession of Algiers in 1830. At the time of Lord Exmouth's bombardment there were thousands of European slaves in the Algerine galleys. These slaves were mostly natives of the northern Mediterranean shores, taken at sea from the fishing boats and sailing vessels, or from the coast villages and towns by sudden forays.

At St^a. Agnese and Roccabruna there are the ruins of ancient castles. That of St^a. Agnese must have been a place of considerable strength. Local traditions say that it was built by the Saracens, in order to keep in subjection the smiling districts which constitute the Mentonian amphitheatre. Probably, then as now it was a garden, rich in olives, in oranges and lemons, and was considered a desirable conquest by the southern invaders.

The castle of Roccabruna is evidently of much more recent date, although it goes back to the Middle Ages. It recalls to mind the strongholds of "The Rhine Barons," and its possessors no doubt levied black-mail on those who travelled along the coast-road from Nice to Genoa. Although a mere mule track, this road must have been much frequented in winter in the days when there was not a single carriage road across the Alps, and when winter rendered their snow-clad summits an all but impassable barrier.

All along the coast to Genoa may be seen at intervals the ruins of watch-towers, erected in former times in positions favourable to defence, or suitable for looking out. They evidently formed a part of the general system of protection everywhere necessary against the pirates. These towers, the old towns, pressed into the smallest possible space, and surrounded with walls, the villages perched on heights up to which the inhabitants had to toil wearily after the day's labour, all vividly point to times far different to the present. They tell of life passed in constant alarm, of eyes constantly turned with anxiety to the sea, from whence the human hawks were ever ready to pounce on the young, the handsome, and the strong—of hearts torn by the distant groans of relatives in chains in a distant land. Such thoughts have often passed through my mind when gazing

from some mountain height on the now peaceful scene below. Truly we, of the present day, have much to be thankful for; our lot has been cast in much happier times. The good old times do not bear examination; they were, everywhere, days of oppression, rapine, violence, and disease.

A waterfall called the Cascade, in the Carei valley, is worth visiting. After rain there is a good fall of water, above a hundred feet high, tumbling over vast masses of broken water-worn rocks, and forming charming pools. The prettiest road is through Castellare and skirting the lower part of the back range, over which the water descends. The return can be made down the Carei valley, by the Turin or Sospello road. It is a favourite place for ferns, and also for picnics. The road from Castellare, a donkey-track, taking the visitor to the centre of the background of the Mentonian amphitheatre, affords many lovely views. The entire distance, there and back, is about nine or ten miles.

In the immediate vicinity of the cascade there is a hermit's cave high up in the rock. Its very existence was a tradition until an English sailor climbed up a few years ago, and found some bones, utensils, a half-obliterated inscription, and a date, 1598. Since then it has been repeatedly reached by Scottish deer-stalkers and hardy mountaineers, but not without considerable risk. Indeed, I do not advise any one to attempt it.

The view from the castle of Roccabruna is very beautiful, as also are those from Castellare, Gorbio, and St^a^. Agnese. They are all four mere mountain villages, inhabited by the peasantry who till the upper terraces, a simple, hard-working race, who know but little of the world and of its doings. In these villages the curé, or priest, is the father of the flock, and the great man.

From Gorbio to Roccabruna there is a donkey-track over the hills that leads through a very beautiful mountain district, with magnificent views on every side. From this road is well seen, skirting the mountain side, an aqueduct, which brings water to Roccabruna from a great distance. It was completed about twenty years ago. Before that the inhabitants of Roccabruna were very badly off for water,

and depended all but entirely on their rain tanks. Now they have a good supply from a spring that is never exhausted.

Those who are strong and well can go out in all weathers unless the rain fall in cataracts, but the invalid should keep at home when the wind blows hard, even from the south, and when the weather is broken. The detention seldom lasts more than two or three days, and it is a good occasion to write letters, always in arrear from the temptation the constant fine weather affords to out-door life. Indeed, invalids should live in weather-proof houses, like bees in their hive. If it becomes cloudy and rains in summer bees will be seen trooping home in great numbers. Every now and then one comes to the door to see how the weather is. If he reports rain over and sunshine they once more sally forth to rifle the flowers of their sweets. So should we do when ill and no longer fit to battle with the elements.

Most of the places best suited for excursions are indicated on the map of Mentone, which has been drawn up with great care from the Italian ordnance survey. Let no one, however, imagine, says my friend Mr. Moggridge, "that when *all* have been visited he has exhausted the beauties of the immediate neighbourhood of Mentone; on the contrary, there is frequently an entirely new view to be had within 200 or 300 yards right or left of main paths, while each hill, little knoll, or gorge affords a variety in the scenery, either peculiar to itself, or in combination with the distant country. Passing beyond the limits of the map, the country becomes wilder and more grand, but many of the mountain valleys are rich beyond comparison in agricultural products. If ever there was a valley that did 'laugh and sing' it is that of Caiross, a tributary of the Roya. Here in June the rich alluvial soil is covered with abundant crops shouldering one another. Ascending from thence through a fine forest of Chestnuts, Pinus sylvestris, Abies excelsa, A. pectinata, Pinus cembra, and the Larch, a fine extent of grass land is reached, varying in height from 5000 to 6000 feet. This is the eastern arrête of Autéon, and before it has been visited by the mower the blaze of

wild flowers—many of them beautiful and rare—is almost too much for the dazzled sight. There is one gorge to which I would direct attention, because it is within reach of Mentone—the gorge of Piaon, one hour's walk from Sospello (Hôtel Carenco) on the road to Mollinetto. Two very pretty waterfalls greet you at the entrance; a little further the savage rocks, the broken forests, and the tossing, tumbling river give a succession of views ever charming, ever new, that are excelled only by the great gorges of the Roya. Many rare wild flowers may be gathered here even in the Mentone season."

The moon and stars are much more brilliant on the north shores of the Mediterranean than in our latitudes, owing no doubt to the great dryness of the atmosphere, to the paucity of watery vapour. It is the same meteorological condition that makes the sunshine so brilliant and the sky so blue in the daytime. Thus the nights, generally, are indescribably beautiful; the stars shine out with singular vividness, and the planets and larger stars make tracks of light in the sea like the moon with us. When, however, the moon is full, or even partly so, their brilliancy pales before her vivid rays. One of the favourite excursions, with the strong, is to go at night, when the moon is full, along the shore to the St. Louis ravine, as her rays then illuminate the deepest recesses of the ravine. I often myself sit at my window and watch the moon rising over the eastern mountains. Long before she appears at the summit of the ridge, the light thrown on the sky is all but that of day, and when she does show herself, each tree and shrub on the mountain brow becomes visible. The "track of light" on the sea is not a mere path, as with us, but a "river or flood" of light. On one occasion I was sent for to Finale by telegraph, before the days of the railroad, and had to post along the coast on a beautiful night, with the moon at its full. For hours she shed her river of light on the sea, brilliantly illuminating a portion of its surface. I was entranced, could not keep my eyes from the stream of silver waves dancing in the moonbeams, and I fully comprehended and accepted a wild Canadian legend once read. A young man disappeared on his marriage night, and was tracked to

the margin of the great Ontario lake, then frozen and covered with snow. A ball was taking place, and he had suddenly left his bride, his family, and his friends, in the midst of the festivities. He had taken his skates with him, fastened them to his feet on the margin of the lake, and seized no doubt with sudden insanity, had started off in the moontrack, for it was full moon. His friends followed his traces for many miles, but were obliged at last to return to save their own lives. Sledges were then procured and sent off, but too late to save him. He was found dead and frozen some twenty miles from the shore!

The language spoken by the peasantry is a "patois," semi-Italian, semi-French, but inclining to Italian. The proprietors and tradesmen all speak both Italian and French, but with them French now predominates, although it was not so when I first knew Mentone. The shop-signs, formerly Italian, are now French. In feeling, the Mentonians occupy about the same midway position, although their Italian sympathies predominate. At the time of the annexation they petitioned unanimously to be "left alone," but their petition was not allowed to see the light. They are rather a handsome race, with Italian features, black hair, and dark eyes. Many very handsome young women are seen.

As already stated, Mentone has made a great step in advance since I first drew attention to it as a winter sanitarium. There are now some luxurious and many commodious villas to let furnished, and more are building. There are also many good first-class hotels and several boarding-houses, and second-class hotels. The rent of the villas varies from two to twelve thousand francs for the winter season. Most of the hotels take inmates "en pension," that is, boarders, and the terms for board and lodging vary from eight to twelve or fifteen francs a day, according to the character of the house.

The proximity of Nice is a great advantage and resource not only to those who are well and strong, but even to invalids. By means of the railway Nice may easily be visited between breakfast and dinner, and that without any real fatigue. Formerly, when the Turbia had to be

crossed, Nice was all but inaccessible to the invalid population.

Nice is a small southern capital, with its Italian opera and French theatre, its daily fashionable promenade and drive, its military band, and its swarm of gaily-dressed people. Most of the northerners who crowd there in the winter are not invalids at all; they are the cured invalids of former days, of all nations, to whom the southern winter sun has become a necessity. They are also specimens of the more restless of our countrymen and women, Anglo-Saxons, who, after wandering all over Europe for years, settle down at last for the winter at Nice, on account of its social attractions, because it is near home, and because letters reach in thirty-six hours. Our American cousins have also adopted Nice as a winter residence of late years, in great and yearly increasing numbers.

Until latterly but few of the tribe of health loungers chose Mentone as a residence. The Mentonians were at first all real invalids, glad to escape from the gaieties of Nice, as well as from its dust and occasionally cold winds. Many, however, are becoming attached to this picturesque Mediterranean nook. It is thus beginning to attract mere sun-worshippers, and a foreign population is gradually growing up, of the same description as that of Nice and Cannes.

The inhabitants of Mentone are exceedingly gracious and cordial to strangers, and are doing their utmost to render the place agreeable to them. An elegant Cercle or club has been built in the centre of the town, which is well supplied with newspapers. It is open to visitors by subscription, and contains billiard, card, and conversation rooms, and a good-sized theatre and ball-room. On the shore, in the town, there is an esplanade, or sea-terrace, constructed in 1861, and to which the name of "Promenade du Midi" has been given. It is intended to continue this terrace as far as the Cap Martin; when finished it will make a delightful sea-side promenade and drive.

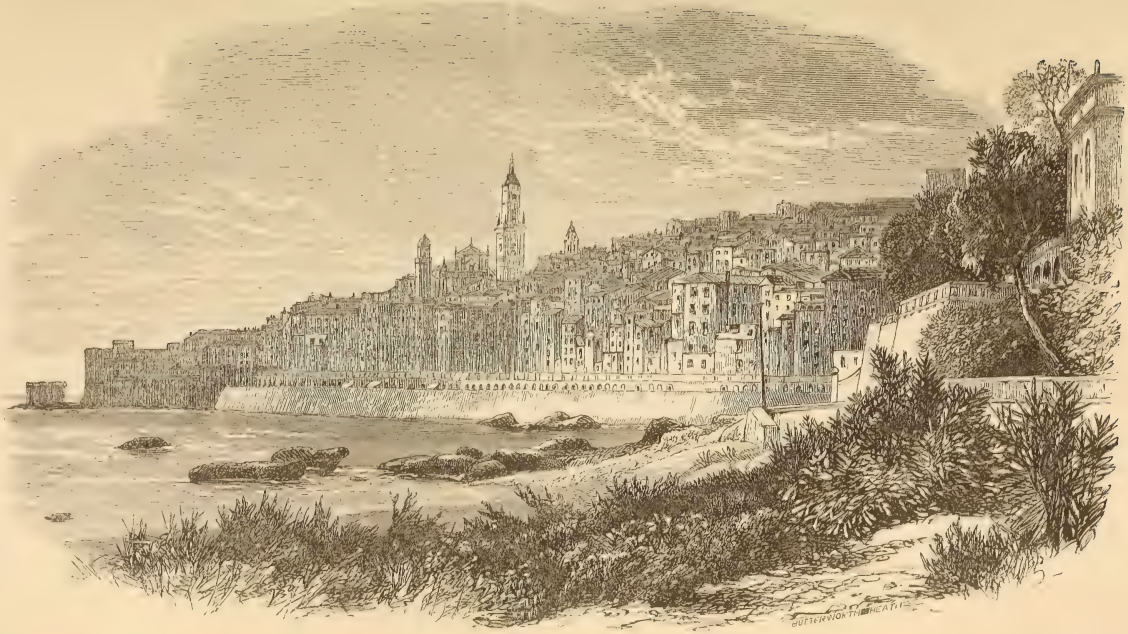
Each winter a series of elegant subscription balls are given by the members of the "Cercle," to which the visitors are invited. They are well attended by the French,

and also by many members of the English community, much to the gratification of the Mentonians. Various other plans for the improvement of the town and its vicinity are on the tapis.

In the town some of the best houses of the principal or modern street are let in apartments, or flats, furnished or unfurnished. These apartments are not so desirable for a residence as the suburban villas, but they are much more reasonable in price.

During the last few years, I am happy to say that a considerable amount of attention has been devoted by the press at home to the hygienic state of southern health-resorts. As I consider myself in a great measure the originator of this feeling, being the first author on climate who has made hygienic conditions the chief basis of his researches, I am gratified to find that public opinion is beginning to awaken to these vital questions. One or two writers, however, have described Mentone as even more deficient in this respect than other sanitaria on the coast; a most unfounded and unfair mistake. So far from this being the case, I do not hesitate to say that the hygienic state of Mentone is much better than that of any other sanitarium between Marseilles and Genoa, not from any peculiar forethought on the part of its inhabitants, but because its population, native and foreign, is smaller.

The drainage of large towns involves one of the most difficult problems of modern civilization, one of as much importance to us in our northern isle as to the inhabitants of southern Europe. In the small primitive agricultural towns of the Ligurian coast, and of the south of Europe generally, the want of main drains is not felt. All the inhabitants are usually landed proprietors. Olive and Lemon trees, even in the sunny south, will not bear crops of fruit without manure, and where is it to come from in countries where there is little or no pasture unless it be from the homes of the proprietors? Hence, at Mentone and elsewhere, before the advent of strangers, the household drainage was everywhere scrupulously preserved, placed in small casks hermetically closed, and taken up to the terraces on the mountain side every few days by the donkey which



MENTONE (THE OLD ITALIAN TOWN).

most possess. There a trench was made round the base of a tree, the contents of the tub mixed with the soil, and the trench closed. Such is the primitive system followed also throughout Corsica and Sardinia outside of the two or three large towns. I have repeatedly been in what may be called feudal residences in the mountains of those lovely islands where no other system is known, and who can say that it is altogether bad? Is it not deodorisation by earth, the return to the earth of all excreta, the solution in country places of the health question, "What is to be done with it?"

When, however, hundreds, nay thousands, of strangers pour into these little country towns, as they have poured into Hyères, Cannes, Mentone, and San Remo, where large hotels are built, each containing more than a hundred people, and numerous villas occupied by large families, the state of things alters at once. Main drains, with collaterals, were not constructed before because they were not wanted. Now that they are wanted, are they the right thing? If made, the only possible outlet is the sea-shore, and a very small amount of drainage thrown into little sheltered bays in an all but tideless sea like the Mediterranean would soon reproduce the polluted shores of Naples.

After mature deliberation I have come to the conclusion that for villas and hotels, in gardens of their own, a good-sized cesspool, isolated from the house, with a sound ventilating air-shaft run up alongside the chimneys to the top of the house, and a good manure pump attached to it, is the best plan to deal with the difficulty. This is what is attempted, but often imperfectly carried out, in these southern villas. Often there is no ventilating shaft at all, or the latter is not air-tight, and thus foul air passes into the house by the closets or through the walls. Then such a thing as a manure-pump is generally unknown. On some fine moonlight night the cesspool is opened, a little tub tied to a long pole is put down, and the contents are laboriously ladled into small casks. In the house in which I reside I made the landlord a present of a manure-pump from London, and now they do in one hour what used to take them two nights, and with one-twentieth part of the annoyance to the surrounding community.

This difficulty about drainage follows man everywhere, and possesses as much importance in England as on the Continent. London physicians are constantly sent for into the country to see cases of malignant disease, fever, diarrhœa, which we know are the result of bad drainage, and that in elegant country residences belonging to the gentry and nobility. It is a question whether the water out-of-sight-out-of-mind system, which has made us so fastidious on this score, has not done more harm than good. In nearly all modern country houses the closets are connected with what are called "percolating cesspools." The fluid contents sink into the earth, and the solid alone remain, merely requiring to be cleared away every year or two. By degrees the soil that separates the cesspool from the water level loses its deodorising power, and the fluid drainage contaminates the water of the adjoining wells. Then come fevers, putrid sore-throat, diphtheria, dysentery, which surprise every one in "so healthy a situation." I believe myself that the only perfectly safe drainage system for a country residence in England or elsewhere is either the old-fashioned garden closet of our farming population, regularly deodorised by earth according to Mr. Moule's plan—a decided improvement on the past—or a Roman cemented cesspool with a manure-pump at a distance from the house. From this every day or two an amount of drainage equal to what enters should be regularly pumped and applied to the garden lawn or land.

The only way, however, to prevent towns, in such situations as the Genoese Riviera, becoming unhealthy from the drainage of a redundant population is for them to remain small. It is therefore to be hoped that the winter emigrants from the north will disperse themselves over the entire Riviera, finding out and colonizing new sites. One convalescent hospital, with 300 inmates, on a healthy common, such as that of Walton-on-Thames, may remain, with care, salubrious and health-giving. Put four, with a thousand inmates each, on the same locality, and it becomes a question whether it would be worth while for them to leave London. The excreta of man are poisonous, and all agglomerations of men tend to breed disease. The fallen

soldiers of civilization, the sick and ill from towns, should seek the country, trees, naked rocks, sparsely-inhabited districts. As an invalid myself, I would rather pass the winter in the pure air of Dartmoor than in the contaminated atmosphere of large, filthy southern towns like Naples, Rome, and Malaga, where the average duration of life is low, where the healthy and vigorous cannot reach the ordinary medium duration of man's existence. By thus colonising a large area, likewise, the element of competition will be brought to bear, and it is the only means of putting an end to exorbitant demands from whomsoever they may come.

Mentone, as an English colony, may be said to have been founded by the late Rev. Mr. Morgan, an English clergyman, who settled there with his family at Mentone in 1857. The first English church, the one in the eastern bay, was built by subscription, under the superintendence of Mr. Morgan and of myself, and opened for divine worship in 1863. The Rev. Morant Brock, of Bath, is the present incumbent.

The fact of this church having been built at an inconvenient distance from those who reside on the western side, has led to the erection of another and more elaborate and expensive church in the western bay, under the direction of the Rev. W. Barber, late of Leicester. The church is in the early style of the 14th century, and was built by the incumbent's son—Mr. W. Barber.

The town of Mentone has presented to the Protestant community a plot of ground for a cemetery adjoining their own. It is situated on the eminence that crowns the old town, where a fortified castle reared its head in former times, the ruins of which may still be seen. It is a peaceful, picturesque spot, and is already the last home of many whose memory is dear to Mentonians. It has been surrounded by a wall at the expense of the Protestant congregations, and a small mortuary chapel has been built, to which the mortal remains of those who have died in hotels can be removed and kept as long as the relatives wish. There is no law, as usually supposed, that renders prompt burial imperative in France. The law only rules that

no person shall be buried in *less* than twenty-four hours after death certified by a medical man. But in hotels it is difficult to resist the "custom" of the country, which is in favour of prompt burial.

A few years ago Mentone was merely a small Italian town, like the other towns on the Riviera, with but little power to supply the wants of foreigners, and especially of the English, who, wherever they are, expect to be made comfortable. Being accustomed to fare well at home, many of our countrymen when abroad, especially the untravelled, fall into a state of extreme despondency if called upon to bear with coarse meat, sour bread, and bad butter. Every winter, however, has improved the markets, and now good bread, meat, poultry, eggs and butter, are to be had, although sometimes only with a little trouble and contrivance. Each winter the supplies have improved in quantity and quality, especially since the railway has been opened. Many of the large hotels get their meat, poultry, and game regularly from Lyons, two or three times a week.

The Mentonian amphitheatre itself produces little if anything beyond olive oil, lemons, oranges, and a few vegetables. The only good butter comes from Milan. Butter is made in the mountains, but probably not with the care and scrupulous cleanliness that are indispensable to insure its quality. That produced in the extensive pasturages which surround Milan, is well known all over the north of Italy, and is really very good. It comes by steamer from Genoa to Nice twice a week, and is supplied to Mentone from thence. Poultry reaches from all parts —from the mountain regions around, from the coast towns, and even from Turin. Many fowls, turkeys, ducks, are brought by the diligence which travels daily beween Turin and Nice, passing over the Col de Tende. Game is to be had, but is expensive, with the exception of hares, which are reasonable in price.

Fish was scarce and dear before the railway was opened to Nice. Now it comes in great abundance, by rail, from the Atlantic to Nice, and reaches Mentone in a good state of preservation, once the cool weather has set in. Thus soles, turbot, oysters, are then all but daily obtainable.

The mutton is furnished by the surrounding mountain regions, and is really good. I have been told by Scotch gentlemen, good judges in such a case, that it is equal to the black-faced mutton of the Highlands. The lamb is killed too young, but is still very tender, and good food for invalids. The veal is also killed young, and is good. The beef is sometimes good, at others indifferent, as it is likely to be in a country where there are no pasturages, and where it must come from a great distance, principally from the plains of Piedmont. As the poor cattle have to walk all the way, along the coast or over the mountains, they are, of course, lean on their arrival, however good the breed, and it would not pay to fatten them. In former days the inhabitants of these regions seem to have been quite satisfied with the flesh of old cows and oxen.

The expense of living at Mentone has quite doubled since I have known it, that is, within a period of fifteen years, and is now quite as high as at Nice and Cannes. This is, however, easily explained by the more luxurious style of living, and I cannot say that the inhabitants of Mentone are to blame.

House rents have risen very considerably, owing to the demand having been very much greater than the supply, which raises prices all the world over. Many houses are now building, or in contemplation, which will no doubt tend to diminish rents, or at least to prevent further rise. Moreover, the neighbouring town of San Remo, also a good winter station, is beginning to be alive to the money value of foreign residents, and is making great efforts to please and secure them, opening hotels and building villas, which will create a salutary diversion.

The cost of living has thus increased, but then the markets are infinitely better supplied, which accounts for the change. As I have been told by Mentonian hotel keepers, the dinners we positively require and exact every day at the hotels and "pensions" are to them festive dinners, which they never dream of unless to welcome friends for a marriage or a baptism. To provide this high standard of food to many hundred strangers, the country has to be ransacked for a hundred and fifty miles around;

Genoa, Turin, Milan, Nice, are all put under contribution. In other words, our standard of living, and that of our American cousins, is very much higher than that of continental people in general, and especially of the inhabitants of southern Europe. We are so ready, likewise, as a nation, to go to any feasible expense to obtain what we want, that we inevitably double local prices wherever we settle in any number, and that all the world over.

As year by year the number of winter visitors and residents increases, their wants and requirements become better supplied; the invalid population itself partly providing for them. Thus every winter brings invalid professors and artists, willing and able to make themselves useful. There is also a French communal college, the professors of which are all well educated, intelligent men, who teach French, Italian, and classics.

For some years there has been a Book Club in connexion with Mudie's, which works very well. New books are received in November and January, and at the end of the season the surplus funds are employed in the purchase of some of the more permanently valuable works. There is already a very fair collection of modern books in hand, as the nucleus of a library.

There are several bankers at Mentone, and English cheques are received and cashed at once with a proper introduction. The hotel-keepers, landlords, and principal tradespeople also accept cheques from well-known tenants and customers without any difficulty, as they easily get them cashed at the banks. Indeed, at first, this implicit reliance on English honour was carried too far. Catastrophes connected with the proximity of Monaco have latterly made all parties more careful as to solvability.

Mentone offers great attraction to invalided artists, for they can both attend to their health and study their art in midwinter in the open air. The scenery is glorious, and the play of the sunshine and of light and shadow on the mountains, on the clouds, and on the sea, produces ever-varying effects, which entrance the artist's eye. Sometimes their professional services can be enlisted, and landscape, drawing, and painting classes are formed.

A winter passed at Mentone is a drama, a little epitome of life. The place is so small, so separated by its mountain barriers from the rest of the world, and the number of resident strangers is so limited, that a kind of common tie binds them together. This feeling may not extend to the entire foreign community, but it is very strong among the members of the same nation. It is the same feeling of union, of a common origin and object, that exists among the passengers of a ship on a long sea voyage. It does not, of course, include passing strangers, the visitors from Nice, and those who only remain a few days or weeks in autumn and spring, on their way to or from Italy; they are looked upon as strangers. The Mentonian family is composed of the winter residents, of those who have made up their minds to spend six months in the happy, smiling, Mentonian amphitheatre.

In October the question is—who is coming? In November nearly all the winter residents have arrived, and have located themselves. Friends find each other; unforeseen points of contact "at home" are brought out, and little groups are formed of intimates, of those who have the same ideas and sympathies. A kind of general notion also begins to get abroad as to who is the invalid in each family, and of the degree of illness.

Owing to my recommendations having been followed by my medical brethren in England, very few extreme hopeless cases of illness, in the very last stage of disease, are now sent out, and there are few or no casualties among the English during the first month or two. But it is very different with the French.

By most of our countrymen and women the order to winter in the south is considered a boon, an opportunity of indulging the darling wish of seeing the world, and a real consolation in illness. To the French, on the contrary, it is the last drop of bitterness in the cup of sorrow. The French cling desperately to home, to family ties, and to their own country, in illness as in health, and can with great difficulty be persuaded to leave, however severe their malady. Perhaps, also, their medical men have not the same faith in change of climate that we have. Hence,

each winter, I see French patients arrive in the last stage of phthisis—so ill, indeed, that their bearing the journey is a subject of surprise. A very few weeks after their arrival the last spark of vital power gives way, and they fall, like autumn leaves before the first blast of winter. They are gathered to their fathers, and the first wail of lament arises on the southern shore, where they have arrived only to die.

Among the peculiar sights and ceremonies that meet the eye of a stranger on his first arrival in an Italian town—and Mentone really is Italian—none is more striking than the funerals of the dead. The male community is all but divided in two fraternities, that of the "Pénitents Noirs," and that of the "Pénitents Blancs." The former dress in a black gown, the latter in a white one, reaching to the feet, and with a girdle round the waist. They also wear a cowl of the same colour drawn over the head and face, leaving only the eyes to appear. They follow the priests and choristers, the former in full canonicals, two by two, to the number of fifty or a hundred, with a taper in their hands, chanting the psalms for the dead. Every one they meet stands still and takes his hat off. The appearance of the whole procession is very weird and imposing, not to say ghastly; it is a homage paid by the living to the dead!

Then comes the close of the year, Christmas, with its home associations, and the new and wondrous sight of summer sunshine and Lemon blossoms, of large dragon-flies, and of other insects, pursuing each other in the sun, instead of the sleet and snow and gloom which we remember, and of which we read, in the fatherland. Sometimes, however, snow tips even our mountains, and reminds us of home. But the contrast is then all the more striking, between the snow-crowned mountains which girt us, and the summer sunshine and summer vegetation by which we are surrounded. Later, comes the new year, welcomed at Mentone as in France, and the festivities of the Romish Church. Lent, the Holy Week, the Carnival, are all celebrated according to the traditions of the Middle Ages, in a very picturesque manner, by the native population, as in the large towns of Italy.

About the month of February the English community in its turn begin to suffer. Some of the invalids have struggled in vain for health and life. Change of climate, medical treatment, the devoted affection and tender care of friends, have in vain battled with the angel of death. His approaches although slow have been sure, and this life has to be abandoned for a better. These deaths cast a gloom on all the community. The departed have endeared themselves to the survivors; they have lived amongst them, they have shared their joys, their sorrows, their exile feelings. The loss is felt to be a common loss; it is that of the passenger who has lived for months in the same ship, sat at the same table, walked the same deck.

At last March and April arrive, the glorious southern spring, the real spring of the old southern poets, of Homer and Anacreon, of Horace, Virgil, and Lucretius. Our own northern poets, unconsciously imitating their Greek and Roman predecessors, describe spring as it is seen in Greece and Italy, not as it occurs in our boreal climate. Hence the feeling of irritation we all experience when every year with us spring arrives, and instead of balmy zephyrs and sunshine, with a profusion of Flora's companions, it only brings cold, biting north-east winds, often with sleet and snow and a frost-bound soil. At Mentone, with the exception of a few days of south wind and rain in March, the poetical spring has arrived. The Olive and Orange terraces are enamelled by nature with real garden flowers, and day after day troops of visitors, principally English, may be seen returning from mountain excursions, flower laden.

I would, in passing, earnestly request visitors not to pay the children and the donkey-women for seeking and bringing them flowers. Some of our more wealthy residents do so occasionally, without reflecting that by thus acting they are giving a market value to wild flowers. The result has been felt already. Peasants, who formerly delighted to allow children and strangers to gather the violets and flowers of no value whatever to themselves, begin to guard them jealously, and to drive off all who attempt to pick them. Were this to become general, half the charm of

the mountain walks would be destroyed. I would also urge on all not to pull up flowers by the roots, or to allow children and servants to do so; and not to wantonly destroy and deface flowering shrubs, or to pull up rare Ferns not wanted for preservation. Otherwise the mountain valleys and terraces will soon become, in all accessible regions, a wilderness, and grow nothing but the vegetables sown in them.

One of the great charms of a residence in the more sheltered region of the Riviera is that wild flowers, as we have seen, may be found throughout the winter. At the same time, until March has arrived, they do not grow with such profusion as to take away from the pleasure of searching and finding. It is singular that the love of flowers should characterize the two extremes of life, early childhood and advancing years. Between the two there is a stage of feverish interest in the world and its doings, that generally takes the mind away from the observation of nature and her works. The child cares not for kings or empires, for ambition or its toys, so it pours out its love and enthusiasm on "wild" flowers. The old, who have gone through all the pleasures and excitements the world can give, often return to the joys of their childhood, to nature's productions, and cultivate with love "garden flowers," in the company of which they find a partial solace for all they have lost or failed to gain.

It has been said, truly, that a love of flowers and of their cultivation is "the last infirmity of sober minds." Fortunate it is that such should be the case, that as we advance in life even plain matter of fact people should find some earthly joys that do not pall, for age is often "weary to bear." We have to abandon, one by one, those who fostered and cherished our early steps, who shared our hopes and fears, who sympathized with us in our success, were pained by our failure. It is the penalty we must pay for living, to lose those with whom life has been wrapped up, to find ourselves abandoned in our earthly pilgrimage in sad succession by those without whose companionship life itself often becomes hard to bear.

As we advance in life we are like a regiment of soldiers

storming a well-defended fortress on a hill. Our comrades fall at our sides, and above the din of battle sounds the voice of the officer, calling, "Fall in, *Serrez les rangs.*" So we do fall in, until if *we* get near the summit, but very few of those who were with us at the start remain at our sides.

The sorrowing friends of the departed are gone. The survivors, improved both in health and spirits, are more keenly alive than ever to the harmonies and beauties of the sea, the sky, the mountains, and the earth. Plans for the future, which earlier in the winter appeared too uncertain to be contemplated, are once more taken into consideration, and the journey homewards is thought of. Moreover, Nice then sends to Mentone troops of healthy, pleasure-seeking people, strong, gay, and happy. They are merely anxious for novelty and mountain excursions, and desirous to escape the March winds, more trying with them than with us.

Then comes the comparing of routes for the return home, of plans for the summer, and finally the leave-taking and departure. Most are sorry, at last, to leave the little sunny Mediterranean nook where they have spent many happy hours, and it is to be hoped recovered health, or at least arrested the progress of serious disease. In many cases more friendships have been formed than would have been formed in years at home, and the new and valued friends have to be abandoned as well as smiling Mentone. In many instances, however, the separation, both from friends and Mentone, is only a temporary one; there is the hope of again meeting.

To the physician, however, who practises in such a locality, among such a community, there is a bright side to departure. It closes an era of pain, of sorrow, of suffering witnessed, alleviated it is to be hoped by his efforts, and certainly shared through sympathy. Away from country, family, and friends, the tie between the physician and his patients becomes very close, very strong, much more so than at home. Their social as well as their physical sufferings and trials thus find in him a sympathetic echo, and his part becomes doubly trying. The actively

engaged physician is truly a stormy petrel. Where there is health and happiness, mirth and joy, he does not appear; he has not the time, he is not wanted. His ministry begins when ill-health and sorrow show themselves As in the old fable he is always rolling stones up the hill; once, however, the stone has reached the summit, it does not necessarily roll down again! If he has to descend, it is to fetch a new stone, not the same; so that, after all, he is better off than poor Sisyphus. I am profoundly conscious that one of my principal motives for perambulating the Mediterranean in April and May, like Ulysses of old, during the last fifteen years, has been to recover, by communion with nature, from the depression of feeling produced by six months' concentration of thought on sad forms of human suffering. The remedy succeeds. Every year I return to my English home "rejoicing," ready again to encounter the battle of professional life.

Such is Mentone, physically and materially. I was so pleased with my first residence there that I should have at once decided on returning the following winter, had it not been for the love of change, which impelled me to search for a still better climate. This desire for change is a feature in the invalid population met with in the south of Europe. Change of scene is in some respects beneficial in its operation, by giving the mind fresh objects of interest, by taking the thoughts from self, and from the many sacrifices which health exiles from home, and their companions, have to make. The difference between the smiling sunshine of a Mentone-winter, a mere long English autumn, and our six months' dismal season is very great, and yet there are few of the cheerful Mentonian exiles who would not gladly return to our cloud-obscured island at any time, were it prudent and possible.

The search after an unimpeachable climate, however, is, in some respects, like that for the philosopher's stone, for the elixir of life, or for the quadrature of the circle—a fruitless one. This will be exemplified by my travels in the Mediterranean and its islands, as detailed in the subsequent chapters.

CHAPTER VIII.

WESTERN ITALY—THE TWO RIVIERAS—EASTERN ITALY.

"O Italy, how beautiful thou art!
Yet I could weep—for thou art lying, alas,
Low in the dust; . . . .
—But why despair? Twice hast thou lived already;
Twice shone among the nations of the world,
As the sun shines among the lesser lights
Of heaven; AND SHALT AGAIN. The hour shall come
When they who think to bind the ethereal spirit
Who, like the eagle cowering o'er his prey,
Watch with quick eye, and strike and strike again
If but a sinew vibrate, shall confess
Their wisdom folly." . . . .

ROGERS' *Italy*.

ALTHOUGH pleased with my first winter at Mentone, I was anxious, the following autumn (1860), to find a still better climate, and, like most invalids, I thought I might as well see the world, and thus combine pleasure and profit. Like most invalids, also, I wavered between many places.

As long as pulmonary consumption was considered a species of inflammatory disease of the lungs, a warm and rather moist winter climate was considered right for consumptive sufferers. But now the more enlightened members of the medical profession know that tubercular disease of the lungs is in reality a malady of the blood and of the digestive system, a disease of lowered general vitality, and that death can only be avoided by the renovation of the general health. What I had to look for, therefore, was a dry, sunny, mild winter climate, in or near Europe, presenting advantages as great, if not greater, than recently discovered Mentone.

I therefore determined this time to turn my steps towards Italy, and to critically examine the Eastern Riviera, Pisa,

Rome, Naples, and the more southern coast of Italy. Guided by a previously acquired personal knowledge of the country, by the information obtained during the preceding winter, and by the reports of other observers and writers, I felt sanguine as to finding in Italy an "Eldorado" combining all the advantages of which I was in search.

In former days, in the days of health and strength, Italy exercised over me, as over all those whose minds are imbued with the history of the past, an indescribable fascination. Several times I escaped from the busy scene of professional life, and rushed to visit its cities and plains. Its classical, historical, and artistic souvenirs and attractions threw over it a charm that never palled. I then purposely threw aside the physician, in order to see nothing but ruins, battle-fields, paintings, and statues. Sickness and human decay appeared a profanation, and I strove to forget them, so as to bring back none but pleasurable reminiscences.

Naples was the southern city, lying on the lovely bay where rises fire-crowned Vesuvius, where the revealed cities of Herculaneum and Pompeii, Baiæ, the Islands of Capri and Ischia recall a thousand recollections. Rome was the former queen of the world, the cradle of Christianity, still studded with innumerable vestiges of its ancient grandeur. Florence was "La Bella Firenze" of Dante, the home of the Medici, the abode of countless artistic treasures. Pisa was the birthplace of Galileo, where the lamp that first revealed to him, when a youth, the laws of the pendulum is yet to be seen oscillating in the glorious cathedral. Whilst Genoa was the proud commercial city of former days, still grandly overhanging the sea it once ruled, still full of monuments and palaces.

This time the scene had changed. I returned to Italy an invalid in search of health, and the arts sank into insignificance, whilst hygiene, climate, and health questions ruled the day. With views thus altered, different impressions were produced, and important medical facts became evident, which, as a tourist, I had not perceived.

I entered Italy by Mount Cenis, and although it was

only the 20th October, there was a great deal of snow on the mountains, and it was very cold in the higher regions. Indeed, the weather was much too cold for chest invalids, who, if they cross the Alps should do so earlier.

Genoa is not so much a medical station as a resting-place for travellers and invalids entering or leaving Italy. Its situation is admirable, at the angle of the gulf formed by the eastern and western Rivieras, protected by mountains, and exposed to the south-western sun. Hence it is very warm in summer, but in winter the protection afforded by the Apennines is incomplete, owing to a "defect in its armour." Behind Genoa the Apennines present valleys, through which the railroad from Turin has managed to find its way, and through which also the north-east wind reaches the town when winter has fairly set in on the plains of Lombardy. Still the protection is sufficient to make the climate perfectly different to that of these plains in autumn and spring. On the 22nd of October there was a heavy cold fog when I left Turin, which continued until we reached the mountain passes, completely obscuring the horizon; winter was everywhere, the trees leafless, and the soil denuded. The fog had left us when we emerged from the first tunnel, and the air had become clear, dry, and bracing. On escaping from the last tunnel, near Genoa, we had gone back to midsummer; the sky was blue, the sun bright, the air warm, the windows and doors were wide open, and the outdoor life of Italy was in full operation. It was indeed difficult to believe that half an hour—the passage by a tunnel through a mountain—could be attended with such a change in the aspect of nature.

Genoa presents two great disadvantages; it is a densely populated city, and, like all Italian towns, badly drained, and unhygienically built. In all large towns in Italy, Turin excepted, the streets are very narrow, generally only a few feet wide. The object was no doubt twofold: firstly, to provide for the exigencies of fortification, and secondly, to exclude the sun, the summer enemy. The towns and villages now found in the south are all historical; there are no cities like the busy thriving Lancashire marts, the

product of manufacturers' activity in modern times. The towns and villages are those of the Middle Ages, and as such circumscribed within walls and fortifications, and perched upon heights for protection, just as they were hundreds of years ago. Such a style of architecture is proverbially unhealthy, especially in the south, amongst a population to whom the cleanliness and the exactions of modern civilization are as yet but little known. To crown the whole, the principal hotels at Genoa are on the port, the receptacle of what drains there are, and tideless, as are all ports in the Mediterranean.

Owing to the above causes, although to the traveller one of the most picturesque and interesting towns of the Mediterranean, the native city of Columbus is not a healthy abode. The invalid, therefore, had better not prolong his stay, unless he have the command of a garden-surrounded villa in the suburbs. In the hotels it is better to choose the higher stories, as the higher the rooms occupied the purer the air, and the less likely is the occupant to suffer from atmospheric impurity.

I must remark, that throughout the Continent the traveller, ill or well, should leave the window more or less open at night, the air of the staircases and passages being all but invariably very impure, even in the best hotels. If the window is not opened at night, the bedchamber is supplied from this vitiated source, foul air is breathed, and typhus fever often generated. I believe that the numerous travellers who every year mournfully die all over the Continent of "gastric fever," as it is amiably called, away from home and relations, are mostly poisoned in this way. If the window is even slightly opened, pure air is admitted, instead of the foul air of the passages, and this danger is avoided, or at least diminished. Pure air can do no harm, night or day; night air is only injurious to those who expose themselves to it out of doors, without sufficient clothing, or in bad or delicate health.

Descending the eastern Riviera, the first town or village of any importance is Nervi, a station much esteemed by the physicians of the north of Italy for consumptive

patients. Nervi is better protected than Genoa by the mountains, which approach nearer the coast, and being small, principally composed of one long street along the shore, it is free from the hygienic objections to which Genoa is exposed. Nervi does not, however, appear to me to present any peculiar recommendation to strangers. The vegetation is that of the entire Riviera coast, and does not indicate an exceptional climate. The position is not peculiarly picturesque, and I believe the accommodation to be found is essentially Italian, which does not in any respect satisfy the English. There is, however, a boarding and lodging-house, under the direction of an English physician of Genoa, principally supported by the English. The proximity of Nervi to Genoa and Turin appears to be its principal recommendation.

Chiavari, the next town, is situated along the sea-shore, in pretty much the same conditions as Nervi, and presents no feature calculated to arrest attention.

Sestri, further on, is an exceedingly picturesque town, on the margin of a small bay, and at the foot of a high spur of the mountain chain, which runs into the sea. But it faces the north-east, and is screened from the south by the spur in question, so that it loses all claim to be considered a winter sanitary station.

The road, which gradually becomes very bold and picturesque, then crosses the mountain, and descends on Spezzia. I had retained from former travel a very high idea of the beauty of La Spezzia, and was quite prepared to make it my winter residence had I found the climate bear scrutiny; such, however, was not the case. The town is situated at the foot of a magnificent gulf seven miles in depth, bordered on each side by mountains of considerable height. The mountains also extend far inland behind, but they are not sufficiently high to intercept the north-east winds. As a necessary result of this mountain-surrounded situation, at the base of a deep, narrow gulf, there is a great deal of rain throughout the winter, and the weather is often rather cold, as shown by the vegetation. Moreover, there are marshes of considerable extent at the

foot of the hills which surround the town, and in the autumn malaria is rife.

The gulf itself is very lovely, and contains on both its shores several pretty villages, much more sheltered and picturesque than the town. Thus Lerici, about five miles from Spezzia, on the southern shore, lies cosily in a small bay, at the foot of a sloping hill six hundred feet high. At the southern extremity of the bay, on a high promontory, are the well-preserved remains of a strong fortress, the Castle of Lerici, celebrated in mediæval history. It belonged to the family of Tancredi the crusader, and Francis the First of France was confined there, after being made prisoner at the battle of Pavia. There is still a lineal descendant of the great Tancredi living in the village, but he is merely a small peasant proprietor, no longer the owner of even the ruins of the proud castle built by his ancestors!

On the other side of the promontory which forms the north side of the bay is a factory for smelting lead, principally supplied from the lead mines of Sardinia. It was formerly managed by an Italian company, and proved a losing concern. It then passed into the hands of an English gentleman, a friend of mine, and under his energetic direction it has become a most valuable property. I passed several days with him and his family at his hospitable villa on the brow of the Lerici hill, overlooking the pretty bay, the gulf, the islands at its entrance, and the opposite coast. Under the guidance of his amiable daughters, who brought up partly in Italy partly in England unite the most pleasing characteristics of both nations, I boated, roamed about on the olive terraces and in the Ivy and Lycopodium clothed lanes, lay discoursing, musing on the beach, or pic-niced among the ruins of the castle, until I thoroughly understood the love of Shelley for this smiling spot. The house that Shelley occupied is on the shore close to the sea, near the village. It is a square old-fashioned Italian villa, which, with its surroundings, must have thoroughly suited Shelley's poetical meditative temperament. The local tradition is that his death

was not the result of an accident, but that his yacht was purposely run down by some piratical fishermen for the sake of what booty they could get.

During these few days I thus had an opportunity of narrowly surveying the vegetation of the locality, one of the most sheltered spots of the eastern Riviera. I found it the same as that of the western Riviera, but with differences that indicated a lower temperature in winter—more frost. There were no Lemons, the Orange-trees were small, and only in the most sheltered corners; and Heliotropes, fancy Pelargoniums, delicate Cactaceæ, were not living and flourishing out of doors. Still it is a very lovely spot, and I left it with regret. No doubt the comfort and charm of the Anglo-Italian nest into which my good fortune had led me contributed to this feeling.

Between Spezzia and Pisa there is only one spot worth mentioning, and that is Massa Carrara. The town is small and clean, open to the south-west and protected from the north-east by the high mountains in which the marble is worked. The Orange-trees appeared larger and healthier than on any part of this coast. It must be an exceptionally good winter station for the eastern Riviera, and there is a good, clean, comfortable hotel. But it is a dull little place, having no view of the sea, although near it. Neither here nor anywhere else along this coast did I see the luxuriant Lemon-groves of Mentone. Indeed, the protection afforded by the mountains which form the backrgound of the Mentone region is infinitely superior to anything met with along the eastern Riviera between Genoa and Pisa. The vegetation is, consequently, more southern, and indicates a much higher degree of winter temperature, at and near Mentone.

This time I examined Pisa attentively under the climate and hygienic point of view only, and left it with a most unfavourable impression, thoroughly confirmed by subsequent visits and experience. Pisa is situated in an open plain, some miles from the mountains which protect it. This plain does not show the slightest evidence of southern vegetation; it does not even contain the Olive-trees so

common along the coast and on the adjoining hills. Nothing is seen but the dry mop-headed deciduous Mulberry, with Vines, like old ropes, trailing from them. The town is surrounded by a very high wall, which must impede ventilation; the streets are narrow, sunless, damp, and cold.

The far-famed Arno, which passes through the city, forming an arc, is a mere ditch or moat, like the moat of an old fortified town in the north of France, with stones instead of grass, and a sluggish dirty stream meandering at the bottom; it is in reality a mere species of open main-drain. The quarter of the invalids is a quay on the bend of this moat river, about a mile long, and bordered by gloomy third-rate houses. Here they are condemned to walk up and down, looking at the stones and dirty water below them, occasionally swollen into a yellow torrent by the rains. The sunless streets are so chilly that chest patients are seldom allowed to go into them; the country around is a mere dull, denuded plain, which even a southern sun cannot enliven. Moreover, it is often very cold at Pisa, more so than at Rome, there are often fogs on the Arno, and it rains constantly in winter.

To crown all, Pisa is an unhealthy town to its inhabitants, like Genoa, Florence, Rome, Naples and all these ill-built, ill-drained, dirty, wall-cramped southern cities. The average duration of life is twenty-nine years at Pisa and Florence, and twenty-eight only at Rome and Naples; whilst in Paris it is thirty-nine, and in London forty-four. For corroborative evidence on these points I would refer to the chapter devoted to Pisa in Dr. Carrère's highly esteemed work, entitled "Le Climat de l'Italie."

All experienced physicians attach extreme importance to the influence of the mind over the body. A cheerful, happy frame of mind favours the digestive processes, tends to promote sleep, and thus counteracts the influence of disease. The dreary, cheerless monotony of stones and mortar at Pisa, with its ditch river, must exercise a most unfavourable influence on invalids exposed to it for month after month. Once the magnificent cathedral, the far-famed leaning tower, and the Campo Santo, or cemetery, have been explored, there is literally nothing for the invalid to do.

There is, it is true, the university, where many learned and celebrated professors hold forth, but its scientific collections and its lectures are only interesting to students, or to men of scientific and literary tastes. Even to them I question whether the university would not be a snare instead of a boon. Indoor work of any kind, mental or bodily, and close ill-ventilated lecture-rooms, they should avoid. Lounging botanical or geological rambles, or such reading as can be carried on sitting out in the open air, should alone be allowed.

When the present pages were first written (1860) a railroad along the eastern Riviera was not even thought of. Now (1874) it is an accomplished fact, from Genoa to Pisa, with the exception of the mountainous region between Sestri and Spezzia, where there is a break, soon to be filled. Those who are travelling for pleasure should, however, reject the allurements of the rapid railway journey, take a comfortable vetturino carriage, and sleep one or two nights on the way, say at Sestri and Massa Carrara. The sea-coast, mountains, and roads are very lovely; indeed, the scenery by road is only a degree inferior to that of the western Riviera. On the railroad the exquisite beauty of nature is all but entirely lost; for the line is constantly either passing through a tunnel or over high viaducts. Some of these viaducts will bear comparison with the high level bridge at Newcastle-on-Tyne, and are not much more fascinating. No one who has merely travelled along this coast by rail can have the faintest idea of its real beauty. At Sestri I had to take a carriage to cross a spur of the mountain, which here runs down to the sea, and the change was an inexpressible relief. Once more I experienced for a few hours all the delight of old days' travelling, as we ascended picturesque hills, winding along their sides, and rapidly descended by zigzag roads into precipitous ravines. I was sorry when we reached Spezzia, where the rail had to be resumed. From Spezzia the road to Pisa leaves the coast, and crosses the plains of Tuscany; it is not, therefore, of so much importance what style of travelling is adopted.

Florence is not a winter residence for invalids; it is a mountain town, and much too cold. From Pisa you pass

through thirty miles of valleys and mountains to reach it, and once there, you are surrounded by mountains on every side, many of which I have seen covered with snow early in November. The north wind, or tramontana, is also very trying to invalids when it blows, which is often the case. In 1872–3 skating was continued for a fortnight on the frozen Arno.

Rome is a winter residence for healthy tourists, not for invalids; malaria reigns there, more or less, all the year. Every winter it makes victims, even among the healthy, and the medical practitioners who have been settled there for years say that malaria fever complicates, more or less, nearly every form of disease, slight or severe, that occurs, even during the winter months. When the north wind—the tramontana—blows, which is not unfrequently the case for several days together, it is very cold. Moreover, invalids should scrupulously avoid churches, galleries, vaults, catacombs, festivities, and parties—and what is Rome without these, the life of the Eternal City?—merely a temptation and a snare. I may add that all that has been said about the defective drainage, and general unhealthiness of Genoa and Pisa equally applies to Florence and Rome.

Thus I had to continue my pilgrimage, and started from Civita Vecchia for Naples. I did not intend to remain there, but to go on to Salerno, the celebrated medical school of former days, which is near and admirably situated. I also wished to carefully examine the bay of Gaeta, of the smiling and all but tropical luxuriance of which I had retained a very pleasing recollection. These plans, however, were not to be carried out. I once more saw the bay of Gaeta, it is true, but under circumstances which made any exploration an impossibility.

Many years previously, after making a pleasure tour in Italy, and visiting Naples for the first time, with unclouded delight, I started for Leghorn in an old steamer called the *Virgilio*. It was a beautiful autumnal afternoon, and the magnificent bay of Naples was perfectly calm, like a mirror. As we steamed gently past old Vesuvius, the classical coast of Baiæ, and the beautiful Island of Ischia, we all remained on deck, entranced with the glorious scene. On passing out

of the bay the bell rang for dinner; no one dreamt of being ill, and we all sat down, a merry English party, for nearly all were English tourists returning to fatherland.

But alas! unconscious victims to Neptune, we knew not that the September equinoctial gales were due, that the barometer had fallen half an inch that afternoon, that the captain and seamen were anxious, and that we were destined to dire torments. When we reached the deck again the scene was already changing. The sea and wind were rising, and before nightfall we were in one of the worst storms that had been known for years. Our steamer was old and slow, not able to accomplish more than six knots an hour in fair weather. With the wind all but dead against us and a raging sea, her performances were anything but satisfactory. In twenty-four hours we only made about a hundred miles, and the storm continuing with unabated fury, and our fuel being all but exhausted, we had to turn about, to retrace our steps, driving before the wind, and to make for the port of Gaeta as a refuge.

Gaeta we eventually reached, to our inexpressible satisfaction, about seven o'clock in the evening of the following day, and fondly hoped that we were at the end of our troubles. But in this we were very much mistaken. The port is a military port, and according to the rules of those days, at 6 P.M. all communication with the shipping ceased. So strictly was this rule enforced, that although thus driven in by stress of weather, with women and invalids on board very ill, we were not allowed to land. Provisions and coals were even denied us until the opening of the port the next morning, and until orders from the Government at Naples, twenty miles distant, had been received. We were thus obliged to spend the night riding with one anchor in a perilous, exposed anchorage, with fires out for want of fuel, and in great danger of being blown out to sea and dashed against the rocks. As to provisions, if received, but few could have done honour to them.

By ten o'clock next morning orders had been received from head-quarters to allow the "very dangerous crew" of the *Virgilio* to land, so boats were sent to the ship, and a file of soldiers were drawn up on the beach. We were then

landed between two rows of the soldiers, and marched off on foot, like so many convicts, to the town hall to have our passports overhauled. The storm was over, the sun shining gloriously, and by this time, after a forty-four hours' fast, we had become ravenous, and implored our military escort first to take us to a café, for breakfast. Our entreaties and objurgations were, however, all in vain. We were, I presume, considered dangerous people, vile liberals, revolutionists, not to be allowed to come in contact with the loyal inhabitants of Gaeta. We were therefore dragged ruthlessly before the "authorities," thence taken in the same military, or convict, style to the gates of the town, bundled into carriages, and, with a soldier on each box, driven to Mola di Gaeta, a village at the bottom of the bay. Here we arrived at midday, and, free at last from our escort, were allowed to repair the wants of nature. This repast was, I think, even more mirthful and pleasant than the one we had partaken of some forty-eight hours before in the bay of Naples. We were all sick of the sea, and separated to find our way homewards as best we could.

I and two of my companions determined, as a compensation for past hardships and dangers, to make a comfortable and leisurely progress. We got a carriage from Naples, and posted all through Italy, merely travelling between breakfast and a late dinner. This most enjoyable journey from Gaeta to Chambery has remained in my memory, marked with a white stone. The weather was lovely, the country glorious, my companions cheerful, witty, and pleasant, and every now and then the sight of our late enemy the sea added a very delightful sense of security to our enjoyment of the scene. I may add, that from that moment I became a most irreconcilable enemy to King Bomba of Naples, of whose hospitality to shipwrecked travellers I had had such a charming illustration.

Since this memorable expedition I have often made coasting voyages in the Mediterranean, but I have never again been caught in an actual storm. Firstly, I avoid the proximity of the equinoctial gales; and secondly, I carry an aneroid barometer with me, and consult it for two or three days before I embark, with the assistance of Admiral

Smyth's and Admiral Fitzroy's instructions. If the state of things is at all suspicious—that is, if the barometer is falling gradually—however fine, I remain on shore. I have thus several times avoided severe storms which I should otherwise have encountered.

On the present occasion we had left Civita Vecchia overnight, on one of the French steamers, for Naples. At five o'clock in the morning we were awakened in our berths by the steward, who told us that the steamer had run into Gaeta with despatches for the French fleet, and that it was worth while going on deck. We all dressed rapidly, and when we reached the deck a sight met our eyes which can never be forgotten. We were in the well-remembered bay, the haven of former days, and I could have fancied that I was still in the *Virgilio*, at anchor, before the small promontory-crowned town. The night was clear and starlight, and so illuminated by a moon nearly full, that every feature of the mountainous coast came out clearly, as it had done during the dreary night-watch in times gone by. But the scene was very different, for one of the great events of modern Italian history was being enacted before us. My former inhospitable host, Ferdinand the First, of inglorious memory, was dead, after suffering in his latter days, through dire disease, some of the agonies he had inflicted on so many innocent political victims. His son and successor, Ferdinand the Second, as a retribution for his father's misdeeds, was cooped up with the last remnant of his army in the fortress of Gaeta, then before me.

Gaeta crowns a rock several hundred feet high, which terminates a promontory, the northern limit of the bay and port of that name. The walls, the forts, the houses and the churches, built of white stone, shone in the calm moonlight. There were scarcely any lights to be seen, and the town appeared calm and asleep, as it were. But we knew that few of its inhabitants were asleep that night, for great events were taking place. Thousands were lying sick with fever and dysentery within its walls, and it also contained a king at bay, surrounded by a terror-stricken court—a king whose crown was escaping from his feeble hands.

At the foot of Gaeta, on the promontory that connects the town with the mainland, were many bivouac fires. They indicated the encampment of some thousands of royal troops, for whom there was no room in the town, and whose presence served to protect it. Then a mile of darkness, and beyond, nearer the curve of the bay, glared in the dark a more extended collection of bivouac fires, covering the shore and hillside to a considerable extent, and indicating the presence of a much larger body of troops. These constituted the Sardinian army besieging Gaeta.

In the bay, a few hundred yards from us, lay a number of French men-of-war, brilliantly illuminated. All their portholes were open, and from each porthole proceeded a blaze of light; the guns were shotted, and the gunners were beside them ready to fire. A mile or so beyond the French fleet, thus prepared for battle, we could perceive another dark mass, formed of large ships, with but few lights; this was the Sardinian fleet. We were gazing with astonishment and interest at this dramatic scene, when a boat, manned by six sturdy seamen, left the French admiral's ship, and rapidly approached us. Several persons came on board our steamer, and we soon learnt the meaning of what was passing.

The previous day the Sardinian army had left Mola di Gaeta, and made a vigorous attack on the Neapolitan army in front of Gaeta. The Sardinian fleet had entered the bay, advanced along the coast, and supported the land troops very efficiently by its fire. The army of King Ferdinand, and the fortress of Gaeta itself, were placed in great jeopardy by the combined attack of the Sardinian land and naval forces, when the French admiral intimated to the Sardinian admiral the order to stop, threatening to fire and sink his vessels if he advanced. It was to support this threat that the preparations we saw were made; the gunners had been at their guns all night, ready to fire had the Sardinian fleet advanced. This extraordinary and uncalled-for step on the part of the French caused the greatest astonishment throughout Europe; it arrested the progress of the Sardinians, and was the means of delaying the fall of Ferdinand II. for several months. We carried the

news to Naples, where it appeared to excite an all but universal feeling of alarm and indignation.

Naples exhibits the concentration of all the unhygienic conditions previously alluded to. More than 600,000 southerners are living in an extremely confined space, in high houses, in damp sunless streets, and the drains all run into the tideless sea. In the most fashionable part of the town, in front of the houses and hotels occupied by the nobility and by strangers, is a narrow public garden, the fashionable promenade, "the Villa Reale," running for a mile along the shore. On this shore eight public drains empty themselves into the sea; the largest of these drains is opposite one of the chief hotels, and is often so offensive that those who are alive to these questions feel inclined to take a run in passing.

On the land side of the Villa Reale is the main drive, or street, "the Chiaja," and on each side of the pavement, as in most other streets, there are large slits in the road every few feet, a foot long and about an inch broad, to allow the rain-water to escape into the drains, which thus freely communicate with the exterior. It is between these shore drains on the one side, and the drain-ventilated street on the other, that fashionable Naples daily promenades, and it is by the side of this choice region that nearly all our countrymen live, and not unfrequently die.

The picturesqueness of Naples life, closely analysed, is in a very great measure that of filth and rags. The picturesque fishermen pass their lives fishing at the mouth of these sewers. The picturesque lower orders eat, drink, and sleep, as it were, in public, windows and doors open, if they have any. Many are clothed in rags, which they appear seldom to take off until they fall from them, and they are infested with vermin, which they scratch off each other at the street-corners. The town, moreover, is surrounded by pestilential marshes, and is built on a tufa rock, or kind of pumice-stone, so porous that it lets the rain soak in twenty feet, to give it out in dry weather by degrees. Thus, in winter, moss grows wherever the sun does not reach.

A few days after my arrival in November, the autumn

rains commenced with a warm oppressive scirocco, or south-east wind. The torrents of rain that fell in the first twelve hours washed the streets and drains of their accumulated abominations into the sea. The waves and the surf, on the other hand, drove them back again and again on the shore, whilst the wind, rushing up the drains, escaped through the rain openings in the streets, and through the open closets in the houses. The smell throughout the entire lower part of the city was awful, and a considerable portion of the population was at once affected with abdominal pains, diarrhœa, and even dysentery. I was one of the first victims, and after nearly three weeks' suffering from the latter disease, I abandoned all idea of exploring Salerno and the South of Italy. I had only one idea, that of returning as quickly as possible to pure, healthy Mentone. I therefore embarked on a Genoa steamer as soon as I was equal to the voyage, and as soon as the barometer showed me that it was prudent so to do—through its friendly aid escaping a violent storm—and reached Mentone safely. There I remained during the rest of the winter.

To conclude, however, about Naples and its bay. They are most fascinating to mere healthy tourists, for they are hallowed by associations and beauties of the most varied character; but to the invalid, Naples should be absolutely forbidden. Even hardy, healthy tourists may hesitate about a prolonged residence. They should, also, rather choose the more elevated regions of the city than the fashionable Chiaja. The defective sanitary arrangements are not the only drawbacks. When the wind is in the north-east, the Apennines in that direction are so low that it passes over them, they become covered with snow, and the cold is intense. When it veers to the south-east—the scirocco—on the contrary, the heat becomes intense, and the air, being loaded with moisture from the sea, is very oppressive. These extremes, following each other very rapidly, are most trying and unhealthy. The north-west, or mistral, also frequently blows into the bay with great violence, and is a trying, dangerous wind to invalids throughout the Mediterranean. Castellamare and Sorrento

being turned to the north-west, receive this bitter wind in full. They have been much recommended of late years as safe winter residences, but the recommendation is an error, founded on occasional and exceptional fine weather. These localities are the summer residences of the Neapolitans, because they are turned to the north.

It was not, however, without regret that I abandoned Naples. Notwithstanding illness and suffering, I was beginning to feel the influence of its usual fascination. During illness, also, I had reperused Andersen's sun-impressed history of "the Improvisatore," and Lamartine's poetical tale of "Graziella, the Maid of Ischia." The wish became strong again to visit Pompeii, again to explore the Orange clad hills of Castellamare and Sorrento, to sail over the lovely blue bay to Capri, to the azure grotto, and to Ischia. Indeed, it required a strong mental effort to drag me from the Circean allurements of Naples back to quiet Mentone, where no great deeds have been done, where we must be satisfied with the charms of nature, and where the monuments are merely those of the earth's early career, in pre-historical ages.

At that time also the great and glorious political events that characterized the foundation of United Italy were being accomplished, and Naples was a centre of intense interest. The king, Victor Emmanuel, made his entrance into Naples as I was becoming convalescent, and daily passed under my windows (Nov. 1861); the entire population were wild with joy at their deliverance from the Bourbons, and at the regeneration of their native country. I saw, likewise, the Italian hero, Garibaldi, and that under circumstances so creditable to him, that I cannot refrain from mentioning them.

After conquering Sicily with his one thousand followers, and after his triumphant progress through the South of Italy from Reggio to Naples, he had come over to that city to see his friend, the king, and insisted on remaining incognito. He felt that the positive adoration the Neapolitans entertained for their deliverer would have led to demonstrations of such an enthusiastic character had he shown himself, that the king would have become quite

a secondary personage. He therefore went to an hotel, like a private individual, and refused during his twenty-four hours' stay to receive any deputations, or indeed to allow his presence in Naples to be made known. Naples, however, heard of his advent, and the entire city was wild to see him and show him honour. I happened to visit that very afternoon the English reading-room, which was kept by two English ladies. I found them in the ante-room, standing and conversing with two gentlemen, one of whom was Garibaldi—a mild, amiable-looking man, of middle height, with nothing of the fire-eater about him. In a few minutes he took his leave, and the ladies then told me that they had known him intimately for many years, and that that morning he had sent word that he would come and lunch with them in private. True to his word, he came at the time appointed, and remained two hours in their little homely parlour, eating fruit, conversing, and singing songs. This little trait shows the amiable simplicity and warm-hearted faithfulness of the hero. When all Naples was anxious to fall at his feet, and the king of his making was waiting anxiously to load him with honours, he preferred devoting his afternoon to the society of two humble friends of former days.

If the fascination exercised by the bay of Naples is so great that the invalid tourist cannot possibly tear himself away, I should recommend him to make the island of Capri his head-quarters. The island is of limestone—a healthier geological formation than the soft tufa rock of Naples. The population is small, the scenery interesting, and there are several hotels where tolerably comfortable quarters may be obtained. Then there are no marshes, and the air is constantly purified by the sea-breeze. The Naples physicians are in the habit of sending convalescents there, and with the best results. In fine weather there is daily communication with the mainland by boat and steamer; but in winter, in bad weather, the communication is sometimes interrupted for weeks. The isolation is then nearly as great as that of Garibaldi at his island home of Caprera.

The island of Capri is a picturesque mass of rocks, nine

miles in circumference, and two and a half in width, situated at the outside of the bay of Naples, twenty miles from that city, two miles from the eastern cape of the bay, ten miles from the western cape, or Cape Miseno, and forms a species of amphitheatre facing Naples on the north. It is a very lovely little island, jagged and irregular in outline, a perfect chaos of rocks, and a charming residence for a month or two in early autumn or in spring, but not for midwinter. The northern exposure of the island and its distance from the protecting Apennines, leave it without defence against the northern winds. Friends and patients who have wintered there all agree that they had a great deal of rough weather to encounter, much more than on the Riviera, owing to the complete absence of protection from the northern quarters. Its southern shore is a precipitous rock many hundred feet high.

Capri is full of recollections of Tiberius the Roman emperor, who passed the last ten years of his life there, indulging in every species of debauchery and crime. Up to his elevation to the empire, at the mature age of fifty-five, Tiberius had been known only as a great warrior and statesman, as a wise, virtuous citizen, as a good husband and father. Then, singularly, at an age when even vicious men often abdicate their vices, Tiberius, under the influence of a kind of moral insanity, threw himself headlong into every species of cruelty and sensual indulgence, and that in such a shameless manner as to raise the indignation of even this depraved age (A.D. 14). Capri, where he retired, apparently the better to give untrammelled scope to his cruelty and passions, retains to this day the impress of his presence. The ruins of his palace, of his prisons, and of his baths are still shown. Above all, the memory of his nearly unparalleled vices remains as a kind of pall over the beautiful island. It still lives vividly, after nearly two thousand years, in the memory of the peasant inhabitants.

Dr. Bishop—then the leading Naples physician, now practising in Paris—told me the history of a countryman, which is not only interesting, but points out a danger—a hidden rock on the path of the convalescent phthisical

patient, and therefore deserves to be rescued from oblivion. This gentleman came to Naples as a confirmed phthisical invalid. Although in an advanced stage of disease he rallied, and apparently regained his health. Unfortunately he became desperately attached to a very handsome young Italian girl, below him in social rank. Unlike the hero of Lamartine's beautiful tale of Graziella, he married the object of his affections, and retired with her to live at Capri. This unwise step, however, involved him in many painful and trying ordeals. The storm of human passions had also been roused in an unsound constitution. It was the leaky ship going to sea, and exposed to the tempest and to the hurricane. Disease returned, and made a rapid progress, and as this time nothing could arrest it, his existence soon terminated.

Leaky vessels should remain in port, where, like Nelson's old ship, the *Victory*, they may long ride with dignity on the smooth waters that surround them. The battle of life—its storms and tempests—must be left to the young and to the strong. The convalescent phthisical patient should ever recollect that he bears within him the seeds of death, that his disease may return any day, that he lives on sufferance, and should act accordingly. The actual truth should be known, courageously recognised, and thoroughly accepted.

As I have previously stated, the impression made upon my mind by the sanitary survey of the principal health towns of Italy was unsatisfactory in the extreme. The authors whose works I have read on winter climates have, it appears to me, made an extraordinary, but all-important omission. They have studied winds, sunshine, cloud, temperature, protection, and all the various elements which constitute climate, forgetting *hygiene*.

And yet, are not the laws of hygiene of more importance to the invalid than all the rest put together? Of what avail is it to place a patient suffering from a constitutional disease, such as phthisis, in the most favourable climate condition, if every law of hygiene is violated—if he is made to live in the very midst of badly-drained, badly-ventilated towns, such as Florence, Rome, Naples, Valencia,

or Malaga? In these unhealthy centres of southern population, where the mortality is habitually very high amongst the healthy natives, much higher, as we have seen, than in our most unwholesome manufacturing localities, what right have we to expect the general health of our patients to rally? In reality, it would be as reasonable to send consumptive patients in the summer months to live in the worst parts of Whitechapel, Liverpool, or Glasgow, as it is to send them in winter to live in the centre of these unhealthy southern towns.

In former days, when the laws of hygiene were ignored by the medical profession as well as by the non-medical public, when fevers and plagues were merely studied and treated as inscrutable dispensations of Divine wrath, it was, perhaps, excusable for writers on climate to devote their undivided attention to meteorological questions. But now that the mist and darkness have been dispelled, that typhoid fever, dysentery, and other town diseases have been traced to their causes—filth, defective ventilation and drainage,—we know that attention to hygiene is even more necessary for the recovery of health than for its retention. In choosing a winter residence, therefore, hygienic conditions should be first considered, even before warmth and sunshine.

If we are to be guided by such considerations, however, I must candidly confess that I have not yet seen a large town in the south of Europe (the health quarters of Nice and Pau excepted), the hygienic state of which is such as to render it a safe winter residence for an invalid. In most of these towns, moreover,—towns such as those I have just named,—the positions selected for and devoted to invalids are central, and owe their protection in a great measure to buildings, which secure to them the town atmosphere undiluted. Thus are explained the frequent deaths from "fever" amongst our countrymen, ill or well, residing in them, which we every year see chronicled. On the spot you are told that they have died from the fever of "the country." But this fever of the country, as far as I can gather from minute inquiry, is no other than our own old enemy, typhoid, under a continental garb. Its characteristic

features may be modified by some malarious or catarrhal element, but the type is the same. The cause, too, is identical in the Italian marble palace and in the St. Giles's hovel—foul air inside and outside the house—everywhere.

Having failed to discover any more sheltered spot than the Mentone amphitheatre, in the eastern Riviera, and in Western Italy, I determined, on leaving Genoa, to minutely examine the western Riviera, along which there are many populous towns and villages. Each successive station—Savona, Finale, Oneglia, San Remo, Ventimiglia—was examined, and abandoned as inferior, until I once more found myself in the well-remembered site of my previous winter's experience. The conviction which this journey produced, that the Mentone amphitheatre affords superior protection to any to be found between it and Pisa, on either Riviera, is at once explained by reference to the maps in this work.

On no part of the coast do the mountains in the immediate vicinity rise in a chain to the same height—namely, from 3500 to 4000 feet. Nowhere do they recede in the same manner from the shore in the form of an unbroken amphitheatre, so as to completely shelter from the north, east, and west a hilly district such as the one which constitutes the centre of the Mentone region. Nowhere also is there such a background of still higher mountains lying due north, so as to protect in its turn the semicircular shore chain. This background of mountain-land extends fifty miles to the north into Savoy, and is limited only in that direction by the Tenda, a chain which rises from 7000 to 9000 feet. These higher mountains extend towards the shore in a south-easterly direction, and reach it at Finale, more than half-way between Nice and Genoa. Between Genoa and Finale the mountains which skirt the shore are neither very deep nor very high; between Finale and Nice the depth and height of the northern mountain-land constantly increase. Consequently, the amount of protection offered from the north increases in the same ratio, until at Mentone the greatest amount of protection and shelter and undoubtedly the warmest climate of the entire Riviera are reached.

The various towns which skirt the coast are generally placed at the mouths of the rivers which form their ports,

and the rivers of course empty themselves from valleys which break the mountain-line. These valleys being nearly always directed north and south, or thereabouts, most of the towns are placed in the coldest situations on the coast, at the entrance of breaks in the mountain-chain, down which the cold winds blow. A glance at the vegetation shows this: Orange-trees retreat, and Olives and Pines take their place. Here and there, as the road winds along the coast, sheltered nooks and romantic little bays are seen at one's feet, where the Orange and the Lemon, the Cactus and the Carouba-tree, seem to thrive luxuriantly, finding the same warmth and shelter as at Mentone. But in these exceptional corners there is generally no population—scarcely a house; the traveller can only admire and pass on. Again, in the Riviera towns the inhabitants are thoroughly Italian; they still live on maccaroni, olive-oil, soup, and bread, rarely indulging in meat, and ignore entirely the multitudinous wants and requirements of our "difficult-to-please" countrymen. These towns will have to be raised to a much higher civilization level before they can be adopted as winter residences by invalids. I am persuaded, however, that in the course of time their day will come.

An exception may even now be made in favour of San Remo, which participates in the special protection met with at Mentone. San Remo is a town of some importance, about fifteen miles east of Mentone. It has 11,000 inhabitants, and many houses on the outskirts of the town that might be made agreeable to strangers. Moreover, it is in Italy thoroughly Italian, and the Italian language is spoken, although not with great purity.

The example of Mentone, the fact that land in the Mentonian amphitheatre has decupled in value within the last ten years, has awakened the proprietors of San Remo to the great money value of the northern invalids. Several new and comfortable hotels have been built, and a number of villas have also been erected for strangers. Although less picturesque than Mentone, and fifteen miles further from Nice, a great drawback, San Remo deserves the patronage of winter emigrants. The climate is the same

as that of the western bay at Mentone, and no doubt all who do well at the one would do well at the other. I had hoped that it would be less expensive, but I do not find that there is much difference. Nor do I think there will be at any of the Riviera towns, once they have been galvanized up to the standard required as a minimum by strangers. The expense of building, of furnishing, and of obtaining provisions from a distance, must be pretty nearly the same everywhere.

Competition, however, is wholesome, and those who meet with no accommodation to their taste at Nice and Mentone, who wish entirely to avoid the pleasures, blandishments and snares of Monaco, or who are anxious to be actually on Italian soil, may safely pass on, and try San Remo. As the English colony increases the accommodation will surely improve, as it has improved at Mentone, and as it improves in all continental towns which are patronized by our comfort-loving conntrymen.

Bordighera, four miles from San Remo, and eleven from Mentone, is a source of interest to all travellers, as the scene of the adventures of Dr. Antonio. The promontory, on the summit of which it stands, juts out into the sea, so as to form a very conspicuous and picturesque object all along the western coast, as far as Monaco and even Antibes. It appears less picturesque, however, on a near approach, and turns out to be merely one of the small cramped-up Italian towns, of which there are a score along the coast, all very much alike. The suburbs present nothing very interesting, with the exception of the far-famed Palm groves. In these groves, which surround the town on all sides, thousands of Palms are growing with truly Oriental vigour and luxuriance, and give a very Eastern character to the landscape. They are of all sizes, from a few feet to above a hundred, and of all ages, from a few years to a thousand or more. In the garden of the French Consul, more especially, are to be found noble and majestic specimens of this beautiful tree; many of them he told me were more than a thousand years old. The spot on which they are situated was the garden of a monastery of Dominicans, in very bygone days, more than a thousand years ago. It

THE PALM GROVE AT BORDIGHERA.

was these monks who introduced and planted the Palm-tree in the district. Many of those existing were actually planted in this, the olden time, by the monks, of whom not a trace, not a vestige remains, with the exception of these their favourite trees. The accompanying wood engraving will enable the reader to form some little idea of the Oriental character of the scene, which is well worth a passing visit. The Bordighera Palms, however, are not so beautiful as those of Elche in Spain, or of the African desert, owing perhaps to their leaves being generally tied up. Bordighera supplies Rome with Palms for Palm Sunday, and as the fashion is for them to be white, the leaves are thus artificially blanched. It is this fact, the monopoly of the supply to Rome, that explains the existence of the Palm groves; they can be cultivated profitably at Bordighera and nowhere else. They would grow on any part of the more sheltered regions of the Riviera, from Nice to Finale, but then their cultivation would be altogether profitless, as they do not ripen their fruit on the north shore of the Mediterranean.

It is possible that the siliceous sand that comes down the valley of the Roya from the Tenda mountain, and forms the alluvial sandy flat between Ventimiglia and Bordighera contributes to the health and well-being of the Palms. Although they certainly will grow in calcareous soils, I have always found sand, both in Europe and in Africa, in the soil of the regions where they thrive and are the most luxuriant.

The Bordighera Palm groves being only eleven miles distant are a favourite picnic resort of the Mentonians, and most of us have pleasant recollections connected with their stately shade. There are two hotels at Bordighera; and several villas as also an English church have been built. The latter is the gift of a resident, Mrs. Fanshawe.

Four miles further we come to Ventimiglia, at the mouth of the Roya valley. It is a town of seven thousand inhabitants, formerly fortified, and is interesting as a specimen of Riviera towns unmodified by strangers. Situated at the mouth of a wide valley opening north, Ventimiglia is not, and probably never will be, a health station. It is, how-

ever, one of the favourite drives from Mentone, and between the two stations there are many lovely sheltered nooks and corners, on the coast line and on the hills above. They will eventually be colonized by those who, making a southern settlement, want space, a few acres of land, without paying the fabulous price now asked in the Mentone amphitheatre.

Thus we gradually get back to little Mentone in its smiling amphitheatre of hills, the view of which is nearly as beautiful when we descend to it from the east as when we descend to it from the west.

Mentone was built, like all other Italian towns, for the purpose of defence, and is no exception, therefore, to the Riviera rule. Most of its older streets are sunless lanes, a few feet wide, but the visitors have nothing to do with them, and never need enter them unless it be to gratify curiosity. It is, however, cleaner than the great Italian towns, owing to the great value of the refuse. The people —an industrious race—have to cultivate the rocky terraces, and have no pasturage, no cattle but donkeys and mules. They husband their manure, therefore, with jealous care, and let none escape into the sea or elsewhere. This remark applies also to all the villages and towns on the Riviera.

Thus, neither the land nor the sea are poisoned as in the larger towns of the Mediterranean coast, unquestionably one of the great health advantages of small localities. It is worth all the ruins and art treasures of Italy to the real invalid, with whom the main point is to save or prolong life, not temporary artistic or social pleasure and amusement.

The Genoese Riviera ceases, geographically, at Nice, the Brighton of the Mediterranean. But Antibes, Golf Juan, and Cannes may be said to belong to it meteorologically and botanically. They are sheltered from the north-west wind or mistral by the Esterel, from the north by the mountains behind Grasse, from the north-east by the higher ridges of the maritime Alps. The vegetation is the same as in the Riviera, but with a difference as to degree. The protection being incomplete, the winds are stronger, and in cold exceptional weather the thermometer

falls lower. Cannes is now an established favourite, one of the most flourishing English winter colonies on the Mediterranean.

Crossing the Esterel we come to Hyères, near Toulon, long the favourite winter station for invalids on this coast. Hyères is half a degree, thirty miles, more south than Cannes or Mentone. The sun is as powerful, the summer heat as great, but then the mountain shelter is less even than at Cannes, so the mistral or north-west wind often blows with violence in autumn and spring. Hence the tide of invalidism and fashion now sets eastward. It is still, however, much patronized by the French, and by some of our older physicians, true to the partialities of their younger days. In some cases Hyères has an advantage over all the coast towns we have named on the Riviera. It is three miles from the sea, so that persons to whom the proximity to the sea is disagreeable or pernicious may here take refuge, and still enjoy in winter the advantages of the sunshine and atmospheric dryness of the north shores of the Mediterranean.

It is worthy of remark that as facilities for travelling have increased, the winter migration of invalidism has descended more to the south and to the east. When communication with and on the continent was difficult, our own sanitaria and Madeira, so accessible by sea, answered the purpose. As travelling facilities increased, Montpelier, Pau, Hyères, Nice, Cannes, successively became favourites. Owing to the impulse given by this work and my teaching, the Genoese Riviera has been invaded, and colonized by the tribe of invalids. But the movement will not stop there; when the Indian mail crosses from Salonica in Thessaly to Alexandria in forty-eight hours, and there are steamboats and comfortable hotels on the Upper Nile, a proportion of the well-to-do invalids will no doubt every year get up nearly as far as the upper waters of that no longer mysterious river.

EASTERN ITALY.

As I have already stated, the great political, pleasure, and health cities of Italy, Genoa, Pisa, Florence, Rome,

Naples, Salerno, are all on the west side of the Apennines, and thus sheltered from the north-east winds. The Genoese Riviera belongs to this the western or protected half of Italy. Bologna belongs to the rich plains of Piedmont and is on the high road from thence to Florence. South of Bologna there are no towns of any importance in a political, artistic, or health sense, for Ancona, Bari, Foggia, Brindisi, Taranto, cannot be considered such.

I had long wished to explore the eastern division of Italy, but had always gone with the crowd south and west, until the spring of 1872. Starting for an eastern tour, and having to embark at Brindisi, I resolved to make a leisurely progress through the Adriatic provinces of Italy on my way south.

I was anxious to learn by ocular demonstration how these provinces fared in spring without the protection which the Apennines afford to the western coast. I may safely assert that all, or nearly all, that has been written about the climate and vegetation of Italy applies only to its western or protected shores. The eastern or unprotected Adriatic provinces, are seldom visited by tourists, and seldom even alluded to by the authors of travels in Italy. So it has been for ages. Italy has lived in history, in science, and in art, on her western shores.

I left Mentone April the 16th. The vegetation on the sheltered and sun-warmed shores of the Genoese Riviera, at Cannes, at Nice, at Mentone, at San Remo, was that of the south of England at the end of the first or second week in June. Spring flowers were over; the Banksian and Bengal Roses had been some time in full bloom, as also the Lemon trees. Hybrid Roses and the Orange trees were rapidly coming into flower; deciduous trees, Planes, Oaks, Figs, were rapidly coming into leaf; Willows had long been in full leaf, Vines were about to flower. It was quite summer.

At Genoa vegetation was nearly as far advanced as with us, but on passing out of the Apennines into the flat plains of Piedmont, which are exposed to the northern blasts rushing down from the Alps, too distant to protect them, a change came over the spirit of the

dream—we went back six weeks. There was not an Orange, a Lemon, a Palm, or even a Fig tree to be seen. The Poplars, Willows, and Vines were just beginning to show their first leaves, the Mulberry trees were naked, the Cherry and Hawthorn in flower; cereals were two inches from the ground, and rather yellow, as if they had recently been exposed to severe cold. Moreover, there was a cold north-east wind blowing, such as I had not once felt during the winter at Mentone. It was evident that in these Piedmontese plains the actual frosts of winter must be severe, and that, owing to the absence of protection, winter is prolonged far into spring.

This cold north-east wind and the dust it raised pursued us to Bologna, where I was glad to take refuge. Here I heard that the previous winter there had been several feet of snow in the streets, which remained for weeks, and that the ice on a canal with a rapid stream, which runs through the town, was more than a foot thick. Nor is this surprising when we look at the map, and see that Bologna is in the plains of Lombardy, at the foot of the eastern slope of the Apennines, with nothing whatever to protect it from the north-east blasts that blow from the snow-covered mountains of Styria. So Bologna is intensely hot in summer, from a latitude similar to that of Mentone with its Orange and Lemon trees, and is intensely cold in winter from exposure. Although 7° further south than England, it appeared to me to have about the same vegetation; we must, however, except the Vine and Maize, which the extreme heat of the southern summer ripens. The Vine and the Maize do not get with us the four months' sun-heat they require to ripen their fruit; our September is too cold.

Below Bologna (April 19), as going south we receded from the high mountains which limit Italy to the north, the cold north-east wind seemed to be losing its power, and vegetation was more advanced. The Poplars were in leaf, the Mulberry and Acacia trees showed small leaves, as did the Elms; the Vine shoots were two inches long, cereals three inches above the ground, and healthier looking; elms seemed principally cultivated to support the Vines. They

are allowed to grow some six or eight feet, and then made to divide into two, three, four, or five branches or forks, on which as many shoots of a Vine are trained. The Vine planted at the foot is not trained round the tree—probably that it may not, later, strangle it—but carried straight up one side to the point where the branches divide, when one shoot is tied to each branch of the tree. Often shoots are carried in festoons from one tree to another, and as the trees are planted in rows, about forty feet apart, the effect in summer, when they are covered with fruit and leaves, must be very picturesque. Might we not make use of Vines trained on trees merely for their foliage? Their power of all but indefinite elongation, would thus have fair play, and an Oak or Elm covered in summer with Vine leaves up to the summit would look very well. There were neither Fig, Olive, Orange nor Lemon trees. We passed through a flat, well-irrigated, carefully cultivated but most unpicturesque country, bounded on the western horizon by low hills, the dying slopes of the Apennines.

Bologna is about forty miles from the Adriatic, and the railroad strikes the sea some sixty miles to the south. It then skirts the shore until Ancona is reached. Ancona, although a town of considerable commercial importance, being the emporium of Italian trade in the Adriatic, is out of the track of tourists, and even of travellers for the east. The latter all but invariably pursue their journey by night train to Brindisi. It remains therefore in the dead-alive state of most purely Italian towns. The streets are narrow, the shops poor, the hotel accommodation very bad, fifth-rate, although there are fine docks and warehouses; so I was glad to be off early the next day.

The rail from Ancona to Brindisi skirts the shore all the way, except when crossing the base of a promontory after reaching the town of Vasto. Proximity to the sea does not, however, seem to promote a milder climate, as on the western coast. Probably the Adriatic is colder than the Mediterranean, from the coldness of the northern rivers that run into it. Moreover from its narrowness the cold north-east winds have not time to get warmed by contact in crossing, so the shores are bleak and desolate, much more

so than the country immediately below Bologna. No doubt away from the sea, in sheltered valleys, at the foot of the Apennines, are nooks in which vegetation is more southerly; but all along the shore, in the vast plains we traversed, bounded on the far-off western horizon by low hills, all was still bleak and winterly until we reached Vasto, on a parallel line with Rome. Previously we had seen a few small Fig trees, struggling for existence in back yards, or in gardens surrounded by high walls, as we see them in our own country, say at Ryde, Isle of Wight; but they never seemed able to boldly take to the open country. These immense plains were principally covered with cereals, or lying fallow, not a head of cattle was to be seen, and no farmhouses. The native population evidently stagnated in sparse villages and towns, with little evidence of civilization around them except handsome churches. It is clear that in Southern Europe, in the Middle Ages, all the savings, all the superfluous wealth of the country, must have been devoted to building and embellishing churches. On no other ground can we explain their number and magnificence in countries which must have been then even more wretchedly poor than they appear to be to-day. That may be one reason why capital did not accumulate in those days, and take other directions, as it does now. I asked travelling companions how these immense corn plains were manured, and the answer was that they were not manured at all, but allowed to remain fallow, and to recover themselves by "natural processes."

These companions were principally local gentlemen, few and far between, who got into the carriage to travel from one town to another. I contrived, by diligent cross-questioning, to get a deal of information from them on the subject of their native districts. It became clear to me that the passage of the railway through these little-frequented regions, and the amalgamation of all Italy into one kingdom, "Italia Unita," has given a great impulse to civilization. It has increased the value of land and of its products; it has raised the wages of labour, and is powerfully stimulating the intellect and resources of all classes in this part of Italy. My Italian fellow-travellers

were full of schemes for the advancement and regeneration of their native provinces. A few years will, most assuredly, inoculate the entire population with ideas of progress, and work wonders in the welfare of these eastern regions hitherto so apathetic, hitherto left behind in the progress of Italian civilization.

Such was the opinion also of an English gentleman who, like myself, was going down to Brindisi, and was my principal companion during a long day's journey. He was an engineer, residing at Sydney, in Australia, had been away two months from home to do a little business in England, had accomplished it, and was on his way back. The little business was merely this. He was connected with a railway in Australia, for which capital and labour were required. So he had left Sydney three months before, had crossed the Pacific, landing at San Francisco, the American continent by rail, and then the Atlantic. In London he had raised the money he required, engaged 500 navvies, shipped them off in two vessels, and was on his way home, where he expected to be within six weeks. He showed me photographs of his wife and children, living, say Adelaide Terrace, Sydney, and talked of this journey—in which, like Ariel, he had put a girdle round the earth—as calmly as if it had been a mere excursion from London to Dublin. I could not help thinking that a dozen of men like him in sleepy Ancona would soon revolutionize the place, and make a very different city of it.

Below Vasto, on crossing the base of the promontory, we came upon some moderate-sized Olive trees. Here and there we passed through patches of uncultivated ground, sandy, siliceous, which was covered with the same vegetation as the *maquis* or brushwood in Corsica—Cistus just beginning to flower, Juniper, Lentiscus, Ferula, Asphodel, Ilex, Cork, Oak, but no Mediterranean Heath.

At Bari, which is parallel with Naples, a branch line goes to Taranto. I had long wished to visit this city, it looks so very tempting on the map; sixty miles (one degree) south of Naples, turned to the south-west, and sheltered from the north-east by a semicircular mountain range. I quite expected to find an unknown southern Eldorado,

but was disappointed. The mountain range only rises 1000 feet—not enough to give complete protection from the north-east winds, even in this southern latitude, and the full exposure to the south-westerly winds is clearly a disadvantage. Still, some striking and interesting facts were developed in this slight ascent and short journey.

On leaving Bari, at the base of the low range, we crossed a grove of very respectable Olive trees, but at 300 feet they left us, to be replaced by a forest of stunted deciduous oaks. In their turn they disappeared at about 700 feet, and from this to the summit, which I found 1000 feet. The north-east wind had it clearly all its own way on this the north side of the range. At this low altitude there was scarcely a tree to be seen, but immense tracts of fresh green scanty pasturage, just as on a Welsh mountain. On descending the southern side there were no Oaks, the Olives beginning to appear at 700 feet. At first poor and small, they gradually became larger, and at the southern base we saw fine old trees, although not so large as those of the Genoese Riviera. Taranto is an old wall-enclosed Italian city, cramped and confined, as all such towns are in Italy, situated at the base of a peninsula. In a market garden, surrounded by high walls, I found large Fig trees, Pomegranates, Apricots, no Oranges nor Lemons. There were plenty in the market, but, what with the north-east wind at the back, and the blast of south-westerly gales in front, they could not grow on the coast, I was told, although they grew freely in the interior. Taranto itself is a wretched but picturesque Italian town of 6000 inhabitants, with no regular inn or hotel—merely a café with some sleeping-rooms above it.

I returned to Bari, and pursued my journey to Brindisi. Here I found the same conditions that had marked the entire journey from Bologna downwards—a southern latitude and powerful sun in vain contending with exposure to north-east winds. Brindisi is on a promontory turned to the north, and gets its sun laterally, as it were. Wherever the north-east wind reaches, the land is literally naked, reduced to vines and cereals; where there is exposure to the sun, and protection from the north by walls or other-

wise, it grows all the southern products, just like Naples or Salerno. Thus, there are small gardens in the town in which are fine Orange and Lemon trees, covered with beautiful fruit of excellent quality; but they are in courts, or surrounded by walls twenty feet high. You do not even see the tops of the trees in passing along the streets at the base of the garden walls. On the other side of the harbour, in a valley or fold of land with a south-western exposure, and protected from the north by a belt of Fir trees, I saw (April 25) in flower many of the plants I had left in flower in my Riviera garden eight days before. Sweet Peas, Roses—Banksian, Bengal, multiflora, Tea, hybrid; among others, Chromatella, Gloire de Dijon, Lamarque, Malmaison, Empereur de Maroc; Jasminum revolutum, Linum rubrum, Verbena, Zinnia, Petunia, Lantana, Cineraria, Pelargonium, double Geranium, Strawberries nearly ripe. Most of these plants, however, the Roses excepted, were not luxuriant and fresh, as with me at Mentone. They seemed stinted, generally unhappy, as if they had suffered from cold in the winter. In this garden were large Aloes and Opuntias, unknown all along the coast. In the very centre, and in the most sheltered site in the garden, there was a Lemon tree, some ten feet high, covered with fruit. From the way in which Oranges and Lemons thrive in Italy and in Spain, in the closest possible quarters —in courtyards in the centre of towns, surrounded with high walls, in hollows and valleys without down draughts— I think it clear they would thrive and fruit with us abundantly under glass, and might, as Mr. Rivers says, be cultivated with profit, as Grapes and Peaches are; perhaps, even, we might improve on quality. An old quarry, with a southern exposure, would be the very place for an Orange orchard. What they appear not to be able to bear is frost or wind; otherwise they are easily pleased. Some of the finest Orange trees I have ever seen were in the close courtyard of the Seville Cathedral, in Spain.

I thus found, once more, that complete protection from north winds, such as is obtained on the Genoese Riviera, makes up for many degrees of latitude; whereas exposure to cold mountain winds, such as impinge on the entire

eastern coast of Italy, takes away the good effect of many degrees of latitude. The vegetation of the Genoese Riviera is that of the sheltered regions of Sicily, 6° further south; whereas the vegetation of Bologna and Ancona is that of the central regions of France, 6° more north. The fact illustrated is the advantage of protection from the north in all regions, and of full exposure to the south. Every step of my Mediterranean explorations and journeyings has confirmed the truth of this statement.

The excursion to Taranto made me too late for the steamer on which I intended to embark for the East, so I had to wait several days for the next. This interval I spent very comfortably at the "Grand Hotel," exploring the present town, ruminating on the past, and speculating on the future. The greater part of the time I was quite alone—the only guest in this hotel, built by the Peninsular Company for their passengers to and from Alexandria. It is a most comfortable, luxurious caravansail, and presents the curious feature of filling and emptying by a kind of tide on the advent of the Alexandria steamers. On the arrival or departure of one of these magnificent vessels the hotel awakes as from a deep slumber. All is bustle and orderly agitation, most of the 120 rooms are occupied, and movement prevails in the establishment for twenty-four or forty-eight hours, by which time all have departed, and silence and repose are once more the order of the day.

One steamer arrived from Alexandria, with the Indian mail and passengers, and one departed, during my sojourn. Both were most dramatic events to the looker on, and each explained and completed the other.

The departure represented youth—the commencement of life, and of an Oriental career; the arrival was the reverse of the picture. The arrival from the East gave, as it were, a tableau of the return of the same joyous, boisterous, youthful passengers, ten, twenty, thirty years hence. They returned as sober, middle-aged men, with pale wives, with thin sickly-looking children, with Oriental-visaged servants, ayahs, and bearers; or as aged men at the end of their eastern career, sharp-eyed and life-worn, men who had clearly been accustomed to command and to

be obeyed, and who were returning to end their days in their native country.

The first—the departing passengers—were mostly young, strong, healthy, well-dressed, in boisterous spirits. Gentlemen and ladies, seemed like a troop of young people at a Regent's Park flower-show on a fine summer day; even their luggage was quite new and handsome. The arriving passengers—men, women, and children—had evidently passed through the trying ordeals of life. They had no longer roses on their cheeks, and many looked ill and anxious. Their garments were travel-worn and stained, their luggage was old and battered. They had evidently been battling with life, struggling with work, climate, and cares for years, and many had clearly suffered in the struggle.

Brindisi, in the days of the Roman emperors, was a great and important city, the termination of the Appian way from Rome. It was the military and commercial port of embarkation for the East, for Greece, Egypt, Palestine, and Asia Minor. On the subsidence of the Roman empire, it fell into decay, became and remained an insignificant provincial town, without commerce or even local importance, and that until quite recently.

During the Franco-German war the Indian mail was diverted from Marseilles to Brindisi, a change rendered feasible by the completion of the Italian railway down the Adriatic coast. With the stream of passengers from Europe to the East, a new life has been infused into the dormant city. The government has dredged the magnificent old port, which had been allowed to fill up, and has built a great jetty or pier, connecting an island outside with the main land, thus forming an extensive outer port. Docks and warehouses are also being built, partly by private companies, and land has quadrupled in value. On every side are evidences of improvement, of activity.

This revival of energy, however, is, I was told, taking place from without, not from within. It is Italians from the north, from Genoa and Milan, and foreigners, who are the leading promoters of all this commercial and social progress. A little incident in the social state of Brindisi gives the key to the somnolence of its native inhabitants. I wanted some books to read, and in this town of

15,000 inhabitants there were none to be either borrowed or bought; there was neither circulating library nor bookseller. After many inquiries, I was directed to a kind of bazaar; the proprietor opened a cupboard, and showed me some fifty volumes of schoolbooks and missals, or church-services, with a few religious works. It was all he had, nor was there a newspaper on sale in the town. It is difficult for us to conceive such a state of intellectual somnolence in the nineteenth century.

Not finding any books in the town, I inquired if there was any public library, and was told that there was one at the episcopal palace, so I started to find it. At the palace I inquired for the librarian, and after being handed about from one servant to another was shown into the presence of a dignified old gentleman, who proved to be the archbishop himself! I made an apology and explained my mission, on which he made me sit down, and conversed a long while with me, asking all kinds of questions about my journey and its object, England and our system of popular education. He then deputed one of his chaplains to show me the library. With this reverend gentleman, a most courteous and learned man, I spent a long morning examining early and curious editions of the classics and of theological works, of which the library is mainly composed. The archbishop and his chaplains were men of refinement and cultivation. When the heads of the educational department in a country are thus enlightened, and the rest of the community are left in thorough intellectual darkness, the difference between the two must be intentional, the result of a system.

I have recently (May, 1874) traversed Italy from Naples to Turin, and have found everywhere the most undeniable evidence of a national revival. Since the entire country has been united under a single national government, a complete intellectual regeneration has apparently commenced, and is rapidly progressing. Italy is now totally different from the country that I knew twenty-five years ago. Public and private improvements are going on everywhere. In Catania, Messina, Naples, Rome, Florence, and in nearly every other town there is evidence of progress on every side. New sea-walls and jetties, docks and ware-

houses in maritime towns, draining and rebuilding in the continental towns, are in progress everywhere. The railways, the steamers, and the conscription, by mixing provinces and races, are amalgamating the whole nation. Picturesque costumes are disappearing, and at Rome and Naples they are now scarcely seen. But then with them are also disappearing the beggars, the lazzarone, sent into almshouses; in a word, the picturesqueness of dirt and of rags is departing from Italy.

In the country life is becoming more secure, the peasants hitherto huddled in their towns and villages, for the sake of mutual succour and support against brigands and evil-doers, are beginning to issue forth. Before long there will be isolated farmhouses and small hamlets, as with us, as in Piedmont and Lombardy. I found the fertile country from Naples to Rome, from Rome to Florence, cultivated like a garden—not a weed to be seen, and that as it were by invisible hands, by peasants who in these regions live still in villages and small towns, and have to lose hours daily in walking to and from their work.

And thus is being fulfilled the prophecy in "Rogers's Italy," placed at the head of this chapter—

> . . . . "Twice hast thou lived already;
> Twice shone among the nations of the world,
> As the sun shines among the lesser lights
> Of heaven; AND SHALT AGAIN." . . . .

Notwithstanding the dearth of books at Brindisi, I managed to get over my five days' detention very satisfactorily. What with fishing in the inner port, boating and bathing in the outer one, exploring the town and its antiquities, as also the gardens and plantations in the vicinity, what with watching and moralizing over the passengers departing for and arriving from India, what with interviewing the archbishop and his chaplains, completing arrears of correspondence, and writing a couple of essays on medical and horticultural subjects, time did not hang very heavy on my hands. Still when the Corfu steamer arrived from Trieste, I was quite ready to depart.

Gravé par Erhard, 12, r. Duguay-Trouin. Paris.

Imp. Monrocq.

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CHAPTER IX.

SPAIN.

CARTHAGENA — MURCIA — ELCHE — ALICANTE — VALENCIA — CORDOVA — SEVILLE — MALAGA — GRANADA — MADRID — VALLADOLID — BURGOS.

. . . . "And be there joined
Patience and temperance with this high reserve,
Honour that knows the path and will not swerve,
Affections which, if put to proof, are kind,
And piety towards God. Such men of old
Were England's native growth, and throughout Spain,
Thanks to high God, FORESTS OF SUCH REMAIN.
Then, for that country, let our hopes be bold,
For matched with these shall Policy prove vain,
Her arts, her strength, her iron, and her gold."

WORDSWORTH, *Sonnet* XXVIII.

CARTHAGENA.

I HAD been visiting Algeria with some friends, and we had brought our Algerian explorations to a close at Oran. We left Oran on the 30th of April, 1869, at 5 P.M., and reached Carthagena the following morning, in fifteen hours. The passage was rough, owing to the strong west or north-west wind from the Atlantic, which was hurrying south to fill the vacuum caused by heat over the Desert of Sahara, sucked in by that great natural furnace. This wind was carrying with it dark rain-loaded clouds to water and fertilize Algeria. The captain told us that the wind would lull, and the sea become calm, when we got within fifty miles of the coast of Spain, owing to the shelter of Cape de Gata. Whether we really did get under the shelter of this cape, or whether it was, as I suspect, that the African Desert pulled the wind down south, out of our way, I cannot say, but the captain's words proved true. We had some hours of calm and comfort before we reached the coast,

ESPAÑA (SPAIN)

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Paris. Imp Monrocq

Kilomètres

0 50 100 200 Kil.

Milles de 60 au degré.

0 20 40 60 80 100 120 Milles

and were able to scan its rocky shores from afar. There was all but a calm when we entered the magnificent port of Carthagena, the Plymouth of Spain.

On looking round at the high limestone rocks and mountains which form the coast line, and surround the port, I rubbed my eyes with astonishment. Not a shrub, not a blade of grass, not a vestige of vegetable life of any kind or description was there to be seen on the cliffs, or on the shore inland. Scorched, browned by the sun, the rocky coast might have come that very day out of Pluto's laboratory. I was subsequently told by the French Consul that it seldom rained at Carthagena, and that they had then been eight months without any rain at all, that is, during one of the rainiest winters on record in Europe generally, as well as in the north of Africa. I took a walk on the ramparts, and in the vicinity of the town, but found no more vegetation than on a brick kiln, with one exception, a small herbaceous plant, from six to twelve inches in height, with green fleshy leaves, which grew sparsely here and there, and of which no one knew the name. I saw nothing in this sunburnt, dirty, miserable town to deserve attention, excepting the port, the fortifications, and a grand old tower built by the Carthaginians more than two thousand years ago. The Spanish Government, Vandal like, is at present levelling to the ground this curious remnant of antiquity, to make way for some improvements. Owing to the existence of a deep and safe port, one of the very best in the Mediterranean, Carthagena has always been an important military station, and was the principal military and commercial port in the flourishing days of Spanish colonization. The principal riches of this district, now-a-days, are valuable lead and siver mines, worked by the Carthaginians in former times. Having seen quite enough of Carthagena in the course of the day, we started that evening for Murcia, described in books of travel as an Eden of fertility and beauty.

The railroad at once entered upon a plain gradually rising to the north, the aspect of which was peculiar. It was carefully ploughed and furrowed, but not the vestige of a crop was there to be seen—nothing but the naked

earth. On inquiry, I learnt that the land had been fully prepared and that seed had been sown, but that as no rain had fallen since last September, the seed sown had never come up. Such a scene must be witnessed to be believed—thirty miles of ploughed land without a blade of grass on it, for want of moisture. This I was told was the case two years out of three; all hope of harvest for this year was lost. Even if rain came it would now be too late, the sun had become too powerful, and would burn up the grain were it to germinate. As it was nearly ripe in other regions, this can be easily understood. There was not, however, an entire absence of vegetable life, as at and near Carthagena, for the plain was sparsely dotted with Fig, Olive, Carouba, Almond, Mulberry, and Pomegranate trees, the latter in flower. They were all small, and miserable in their leaf development, owing to the drought and to the poverty of the soil—a mere calcareous rubble, varied by apparently stiff clays.

In this arid desert, the like of which I never witnessed in Algeria, I repeatedly saw tufts of the Chamærops humilis, which thus established its right of domicile in south-eastern Europe. I also met with it later, between Murcia and Alicante, and in dense masses in the Andalusian valleys. Near the rare houses or farms were clumps of Opuntia or Barbary Fig in flower. The species grown is the one without spines, or with soft spines, which the cattle can eat. Otherwise, there was no scrub nor "maquis," no brushwood, no grasses, nothing for mile after mile but plains carefully ploughed and sown by the labour of man; all to no avail. On each side of the wide plain rose limestone mountains, presenting basaltic flaws here and there, and diminishing in height as the railroad gradually ascended. At about 1800 feet above the sea, some thirty miles from the shore, where the desolation had become, if possible, fiercer—for even the Carouba and Olive trees had given in—the line turned to the west, and passed through a kind of gorge, to descend into the plain of Murcia.

The plain of Murcia is alluvial, in the form of a delta, between two ranges of limestone mountains, some 2000 or 3000 feet high, and is rendered fertile by the presence of a

small river, and by a system of irrigation which dates from the time of the Moors, and transforms a barren wilderness into a perfect garden. The mountain side continued to present exactly the same features of barren desolation as near Carthagena, until a level was attained which enabled the water to be used, and then the transformation was magical. By the means of canals of derivation taken at a higher level in the valley, a very considerable extent of the sloping ground even is brought under the beneficial influence of water, and at once smiles with fertility. From the barometer, I should say that the irrigation begins about 1000 feet above the sea-level. Instantly, the naked, barren, furrowed fields give place to Wheat crops, which increase in luxuriance as we descend. As the red ferruginous lime soil becomes deeper, and richer in humus produced by centuries of previous cultivation and vegetation, the Caroubas, the Olives, the Fig trees become larger—more flourishing; the Vines, up to then, mere dry gnarled roots, rising one foot from the ground, show leaves; Mulberry trees make their appearance, then Pomegranates in flower, also Date Palms in considerable numbers, in groups of two, three, or more, principally near the farms.

When the level plain was reached, a couple of miles from the town of Murcia, the luxuriance of vegetation was extreme. Caroubas, Opuntias, and Olives all but disappeared, the land had become too valuable for them. The small Fig trees had changed into large forest trees, many feet in diameter; the Mulberry was planted thickly along the side of the road and around the fields, whilst the ground was principally occupied by dense luxuriant crops of Wheat, three feet high, just turning colour, with here and there patches of Flax, Beans, Peas, and more Palms from twenty to seventy or eighty feet high. This luxuriant vegetation owed its existence entirely to irrigation, for here, as at Carthagena, I was told that it had not rained for six or eight months; but an entire river had been diverted from its course and used up. Every plot of cultivated ground was surrounded by an irrigation ditch, every field by a raised earth bank, some ten inches high, and by this means there was the power of throwing water over every foot of

this artificially fertile region. The river itself rising in the mountains of the interior where plenty of rain falls, the supply of water is never wanting, however great and continuous may be the local drought, even if it lasts for years.

Thus, the fertile plain of Murcia is independent of rainfall. With a never-failing supply of sunshine, heat, and water, it has been, from the time of the Moors, who first established the system of irrigation, a mere market garden, like those at Battersea, and has been cultivated in the same way, one crop rapidly succeeding another. As a result of this profuse production of the necessaries of life in a southern climate—oil, wine, bread, dates, vegetables, fruits—a large town has grown up in the midst of it, the town of Murcia with its 45,000 inhabitants, living and fattening on Nature's bounty. From the cathedral tower is seen clearly the immense delta, with its base on the sea, enclosed between two limestone mountain ranges, entirely covered with the vegetation I have described, and dotted with groups of tall Palms, which give a very Oriental appearance to the scenery.

MURCIA.

On rising the morning after our arrival at Murcia, and leaving the hotel, to look about us, we found out that we really were in Spain, in the country of the Barber of Seville, of Count Almaviva, of Don Basilio; everything was Spanish. The women had mantillas and fans, and the men really wore the elegant fantastical costumes we see represented on the stage and in books. The streets were narrow, the houses low, the windows protected with iron screens, bulging out from the window-sill. The beggars were picturesque and importunate. The churches were numerous and imposing, towering over the town and dwarfing all other buildings, just as the Church of the Inquisition, for centuries, towered over and dwarfed free judgment and social life in Spain.

It was Sunday, and the entire population was out of doors in holiday costume, which gave us a good opportunity of studying costume and race. The lower orders, and the

lower middle classes, had clearly a deal of Arab or Moorish blood in their veins. Their complexions were swarthy, olive coloured, and their eyes and hair generally coal black. The women did not strike me as particularly lovely, but they had a fire, an animation about their speech and movements that we seldom see in northern climes. Many of the higher class women seemed to belong to a different race, for they were fair-skinned, and had brown, even light hair. This difference of race characteristics was still more marked further north, at Valencia and Madrid. No doubt these light-complexioned Spaniards are the lineal descendants of the northern races that long held Spain in subjection, of the Goths and Vandals of early history.

Whilst at Murcia there was a "Bull-fight," so, as in duty bound, we went to witness the performance. It was the first exhibition of the kind that I had seen, and will be the last that I shall ever witness. I was not so much struck with the cruelty of the entire proceeding, although that is very great, as with the treachery and barbarity shown to the brave bull. The one that I saw fought like a Trojan of old, splendidly, magnificently, refusing no enemy, no encounter. He turned over the Picadors like men of straw, ripped up the horses, and drove all before him like chaff. Then, at last, out of breath, tired with his vain efforts to get at his enemies, he went to the gate by which he had entered, and bellowed to be let out. He seemed to say, "I have had enough of this contemptible folly, let me out." He was allowed to depart for a few minutes, whilst the dead horses were drawn away, and the amphitheatre was put in order. Then the portal was opened, and the same bull bounded into the arena perfectly furious, bellowing and tossing the sand at his feet. He seemed to have thought better of it, and to be determined that this time he really would make mincemeat of his enemies; he was clearly much more dangerous. Within five minutes he all but pinned one of his tormentors to the wooden balustrade, making the building resound with the shock, and tearing off one of his horns. The man was clearly hurt, for although he contrived to jump over the balustrade, and to quietly walk away, putting a good face on it, he soon dis-

TICKET OFFICE FOR THE BULL FIGHT (MURCIA).

appeared, and was seen no more. By this time my sympathies were thoroughly enlisted on the bull's side. I mentally applauded him, saying with the Spanish audience "Bravo Toro," and applying to the injured Toreador the Yorkshire jury's verdict, "Served him right." Then to my indignation, as if in revenge for his noble defence, a dozen large bulldogs were let loose on the brave animal. They instantly fastened on him, one on each ear, one on the tail, two on the neck, and one on his muzzle. The poor brute had a perfect chaplet of these bloodthirsty dogs hanging on him like leeches. He was quite powerless to get rid of them, and kept careering madly round the amphitheatre, bellowing piteously all the while. This was no longer fair fighting, but a brutal persecution of a noble beast. When he was all but exhausted, he stood still, quivering in the arena, and the master of the dogs came forward and pulled them away.

Freed from his tormentors, his lips torn to shreds, the place of his lost horn marked by a gory gash, blood streaming from his lacerated ears, neck, sides, and tail, he was still game, bellowed defiance lustily, and turned round once more on his enemies. I thought of Byron's lines, for even then, after so brave a fight, there was to be no mercy for him, he had not gained his life by so valiantly defending it.

> "Foil'd, bleeding, furious to the last,
> Full in the centre stands the bull at bay,
> 'Mid wounds, and clinging darts and lances brast,
> And foes disabled in the brutal fray.
> And now the matadores around him play,
> Shake the red cloak and poise the ready brand,
> Once more through all he bursts his thundering way.
> Vain rage! the mantle quits the conynge hand,
> Wraps his fierce eye—'tis past—he sinks upon the sand!"
>
> BYRON. *Childe Harold.*

And so sank my fierce, brave bull. I mourned over him, and left, although the clarion announced other fights. But I was myself becoming bloodthirsty, and felt, that had the bull pinned one of his tormentors to the earth, as he pinned the horses, the sufferer would have had but scant commisera-

tion from me; so I thought it best to depart. It is truly a barbarous scene. It would have a redeeming feature if the bull could save his life by his bravery, but no, he is always butchered, however brilliantly he may fight. He may always say, as did the Roman Gladiator of old, when defiling before the Roman emperor, "Moriturus te salutat, imperator." "A man about to die salutes thee, O emperor."

Whilst at Murcia I went to see the summer residence of the late Lord Howden, formerly our ambassador at Madrid. Some twelve years previously he bought a plot of this rich land, about a mile from the town, built a house, and made a garden. The latter is very interesting as an evidence of the rapidity of growth in such a climate, with rich earth and water *ad libitum*. If what his bailiff told me be correct, the Date Palm planted under such conditions is by no means a slow growing tree, as usually supposed. Palms only six years old from the seed were five feet in the stem, whilst others, twelve years old, were twelve or fifteen feet; quite young trees. They are planted in profusion, but nearly always in beds or ditches, sunk two feet below the level, so as to admit of water being turned in, and of their being thus literally drenched. This, I was told, was repeatedly done during the summer or growing time. In the garden (May 1st) there was a profusion of monthly Roses, multiflora, Bengal, Banksia, and Centifolia, very few hybrids; also Hollyhock, Delphinium, Poppy, white Lily, Jasminum revolutum, Petunia, Carnation, Pink, Stock, with Bignonia jasminoides and Passion Flowers, as climbers, all in flower.

In the public garden at Murcia I found the same flowers; that is, with the exception of the last two named, our early summer flowers. I was rather surprised to see in a large conservatory at Lord Howden's, plants in pots which I should have thought would have done well out of doors—Pelargoniums, Lantanas, Latania Borbonica, Abutilons, Heliotropes—a fact which seemed to imply cold nights and some frost in winter. With all its luxuriance this valley must then have a very winterly look, when the Mulberry, Fig, Pomegranate, Almond, and Vine are all devoid of

leaves. The Orange trees are numerous in the district, but they are generally planted in orchards and not as ornamental trees. Moreover, they are treated in a manner which much diminishes their beauty. When young the stem is cut near the ground, and the numerous shoots which spring up are preserved, so that the tree grows up as a bush and remains so. It is graceful enough as an evergreen bush, ten or fifteen feet high, but loses all the dignity and beauty of the Orange tree when fully developed, as on the Genoese Riviera, at Blidah in Algeria, or at Milis in Sardinia.

I had left Carthagena with a shudder at the very idea of being condemned to remain there, not the winter, but even a week or two, although, I have no doubt, that the climate is exceptionally mild, dry, and healthy in winter. But who could remain for months in a filthy, dirty, dusty, sunburnt Spanish seaport, a kind of southern Wapping? Then there is no accommodation, and probably no food fit to eat. The inn we stopped at was wretched, in a narrow close street, without comforts or any one redeeming point. Thus Carthagena is altogether out of the question as a health resort.

With Murcia I was more agreeably impressed. The hotel, although very second rate, was large and more commodious, and the fare was better. I have no doubt that life might be arranged with tolerable comfort; but then this hotel, the principal one, is situated in the centre of the Spanish town, in a narrow street, from which effluvias, anything but aromatic, constantly ascended to my windows. I have no doubt, from what I saw, that the winter climate is pleasant and healthy, dry, sunny, and mild, but I presume not sunnier, or milder than is the Genoese Riviera, perhaps not as much so. If such is the case, why descend to the most southern extremity of Europe, in the most south-east corner of Spain, merely to find what can be found within a twenty-four hours' journey of Paris? In definitive, my mental conclusion was, that if Lord Walden were to kindly offer me, and my friends, his pretty, well-built, cheerful, airy villa, on the outskirts of the town, I might be tempted to try Murcia, were I still in search

of winter quarters; not otherwise. Even then I should have a qualm; I should ask myself whether the very extensive and perfect irrigation of his flower garden and Palm trees, and of the market gardens and Palm trees of his neighbours, may not produce ague, fever, malaria, as it does in the oases of the Desert of Sahara, and that even in mid-winter.

PHYSICAL GEOGRAPHY AND GEOLOGY OF SPAIN—MURCIA TO ELCHE AND ALICANTE.

In order to understand the climates and the very varied vegetation of Spain, the examination of which was the special object of my visit, we must bear in mind the principal geographical and geological features of the country. I will therefore briefly recapitulate them before we proceed on our journey to Alicante.

The peninsula of Spain is a mountain plain or tableland, raised from two to three thousand feet above its own coasts and above the sea. This tableland is itself divided into parallel sections, from east to west, by a series of high mountain ranges, all but parallel to the Pyrenees, the principal of which are the Sierra Guadarrama, the Sierra Toledo, the Sierra Morena, the Sierra Nevada. Between these mountain chains are the great central raised plains of Spain, more than two thousand feet above the sea-level, and formerly the bottoms or beds of seas and estuaries, or of freshwater lakes. In these plains run all the large rivers, all of which empty themselves into the Atlantic with the exception of the Ebro. Their course is parallel to the mountain chains. Below this tableland is the coast, sometimes a mere ledge or undercliff, but oftener presenting small alluvial plains of greater or less width, watered by the rivers that descend from the higher regions. It will be at once understood that such a country must present two totally different climates; the climate of the coast or sea-level, that of the latitude in which Spain is situated, and the climate of the central raised plains and mountains. The latter must be, and is, from its great altitude, a much colder climate than that of the coast.

The main features of the geology of Spain are very simple and easily retained. The mountain chains enumerated are primary, and form the basis of the geology of Spain. They emerged before the secondary period, before the secondary formations which surround them. The Guadarrama chain is formed of granite, gneiss and crystalline schists; the Toledo chain of granite; the Morena chain of slates, psammites, quartzites, and sandstone; the Nevada chain, S.E. of Granada, of masses of crystalline schists with numerous garnets.

The secondary rocks are represented by the Trias triple, which extends from the Pyrenees to the provinces of Asturias and Santander, and also by the Jurassic and cretaceous formations, which occupy a vast area in the eastern and southern regions of Spain, forming to the east mountains many thousand feet high, which constitute the separation between the eastern and western watershed, and penetrate into the heart of the country along the Guadarrama.

The tertiary formations are represented by nummulitic rocks or older tertiaries, always contorted, as at Santander and at Malaga, and by miocene or younger tertiary beds or deposits, both marine and freshwater. These younger tertiaries occupy very extensive areas, principally the plains and valleys of the great rivers, the Ebro, Douro, Tagus, Guadiana, and Guadalquivir, which, as already stated, were formerly seas, estuaries, or freshwater lakes. In some regions the miocene and pliocene deposits reach an elevation of 2500 feet, which shows how greatly the peninsula of Spain must have been raised in comparatively recent geological times. Many, both of the freshwater and marine fossil shells, belong to species still living.

For the above geological details, which entirely corroborate and give form to my own observations, I am indebted to Ford's valuable "Handbook for Spain." I did not bring the work with me, expecting to find it at the first Spanish port, but could not obtain a copy until I reached Madrid; a hint to other travellers. I would remark also, as a proof of the scientific apathy of the Spaniards, that I failed to obtain, either at Valencia, the seat of an important univer-

sity, or at Madrid, the capital, a geological map of Spain or any work on its geology. I was told by all the booksellers to whom I applied, that no such map or work existed, unless in a French or English form, and that as there was no demand whatever for such maps or works, they did not keep them. The booksellers' shops throughout Spain are few and far between, and miserably supplied. They appear to contain little else but elementary educational works, translations of French novels, and religious books.

Wishing to see the Palm groves of Elche, and the country between Murcia and Alicante, we chartered a kind of light omnibus, drawn by four mules, and started at eight o'clock in the morning. We were to remain two hours at Elche, and to reach Alicante by six o'clock, the state of the road permitting. The road to Alicante, a seaport about forty miles distant, passes in a north-easterly direction over a spur of the secondary limestone mountain that bounds and forms to the north the vale of Murcia; it again falls into the latter at Orihuela, about twelve miles from Murcia. As soon as we had ascended out of the reach of irrigation, desolation reappeared; thousands of acres of ploughed land, without a blade of grain or grass, without a weed, and vegetation reduced to small stunted Olive, Fig, and Carouba trees, especially the latter. At the same time, groves, thickets of Opuntias showed themselves, all in flower. Men eat the insipid fruit, cattle the leaves, so some good is got out of them, and they seem all but able to grow out of a burning rock; they clearly like the lime soil. On descending again into the vale of Murcia at Orihuela, as soon as water is reached, the same magical change as before is witnessed.

The first well is indicated by a house, some vegetation around, and two, three, or more Palm trees; for, as in the African Desert, the Palm tree means water, in the soil below the surface, a well or a running stream, more surely than does the Lombardy Poplar in Continental Europe. When steady irrigation commences the same exuberant fertility appeared as near Murcia, and the Wheat was also turning yellow; there were Beans, Peas, Flax, large Mul-

berry trees, Olive, Carouba, Almond, Apricot trees, with Vines and Pomegranates. I never before saw such Apricot trees, as large as fifty year old Oaks, and spreading like them. The fruit was beginning to ripen, but is inferior, as is the fruit of most trees grown in the open fields on the Continent. But the peculiar feature of Orihuela is the Palms; they appeared in orchards, in groves, in thickets of fifty, a hundred, or more acres, from ten to a hundred feet high, exactly like the Palms in India, as one of my companions, an Indian officer, stated.

The explanation of their presence, in such multitudes, in this district is that from Carthagena to Alicante, owing to the intense heat of the summer, and to the dryness of the winter climate, they ripen their fruit, which consequently becomes an important object of trade. The Dates are the large, farinaceous species, not the soft sweet kind encrusted with sugar. Orihuela is a dense hive of human beings, 19,000 strong, all subsisting on the bounty of Nature thus helped by man, and in a great measure on the produce of the Palm dates. I remarked throughout this region basaltic rocks cropping out of the limestone mountains, and it is probable that their presence gives another element to the limestone soil, and one that suits the constitution of the Date Palm, as I have previously stated. Rather severe earthquakes are occasionally felt.

On rising out of this happy valley, in our track across the rainless country, we once more entered calcareous plains, sunburnt, and all but devoid of vegetable life. They would have been entirely so had it not been for the Carouba, Olive, and Fig, which here again, although stunted, manage to live through all these difficulties. These trees possess roots that have the power of travelling nearly any distance, or dipping down nearly any depth in search of food and water. They are, as my Mentone gardener calls them, "robbers," and I have had to extirpate the Fig entirely in my Riviera garden, for wherever I made a rich border, there I found his roots at the end of a year or two. This explains their power of resistance to drought, coupled with a constitution suited to intense heat and to long-continued vegetative rests or sleeps during hot

dry weather. But although they can thus live on for a year or more, all but without water, merely moistened by the dew of heaven, they do not produce fruit, or at least eatable fruit, under such adverse circumstances. It made me quite sad to see so much labour and seed wasted, an entire country cleaned, ploughed, and sown, and not even a crop of weeds to dig in for the next season. On one occasion I left the carriage and walked over twenty or thirty acres of the ploughed land, and only found half-a-dozen herbaceous Euphorbias, some three or four inches high; two or three small Thistles, and a small Convolvulus flower, at the bottom of a ditch. The calcareous mountain ridges to the north-west, which we skirted, were more bare than the white cliffs of Dover in their most precipitous part. Truly did they seem the bare bones of the earth piercing its skin.

After a progress of some twenty miles through this cultivated wilderness, we came to another valley, and then burst on our astonished eyes an oasis of the African desert, such as we had wished to see in Africa, but had not seen —a forest of tropical Date Palms, extending over a vast region, many miles in circumference, and surrounding the famed village or town of Elche. The river bed was crossed by a good bridge, but in it there was no river. It had been taken up bodily by the inhabitants, and distributed in canals to their friends and bread-givers the Palms. I remained here several hours, and walked miles in the Palm forest, the like of which my Indian companion had never seen in the tropics. There were canals full of water flowing rapidly in every direction, and the ground was everywhere prepared for constant irrigation, in trenches, in squares, in parallelograms, banked up by earth walls one or two feet high. Water was constantly let into these trenches and squares, and allowed slowly to soak in so as to moisten the soil thoroughly, wherever there were roots. Thus, again, was I reminded of the Arab saying, that the Palm "must have his roots in the water, and his head in the fire." There were Palms of all sizes, from twenty to eighty feet of every shape and direction. Some erect, like the Trajan column of Rome, others gracefully twisted or inclined. Sometimes they were

growing capriciously, sometimes in rows, or in squares, methodically planted. The Date forest was most evidently a valuable property, and the boundary of each proprietor's grounds was protected by walls, with doors here and there, admitting of easy ingress and egress. The dates were being gathered from some of the trees, whilst other trees, sometimes the same one, were in full flower. In some regions of the forests, where the Palms were not so close together, there were vegetables, Peas, Beans, growing underneath them, but this was the exception. Evidently the dates were too valuable a crop, like lemons at Mentone, for everything else not to give way to them, wherever they could be cultivated, *alias* irrigated. The land appeared to be a calcareous loam, but on examining the empty river bed, I found it a mass of siliceous sand, so that, no doubt, the soil in the district is impregnated with silex. The dates are gathered by boys, who swarm up the trees, an operation that was easily performed by a small boy for our edification. Like those at Murcia and Orihuela, they are of the solid farinaceous variety. The soft saccharine Saharian dates, which are principally imported into northern Europe, I did not see in Spain. In the Algerine Desert and in Egypt this variety of the date is more valued and more expensive, because it is the one chosen for exportation, but the solid farinaceous variety is preferred for food, as in Spain. In this country the dates ripened on the south-eastern coast are extensively used as an article of food. I saw large quantities of them in all the markets I visited.

Near Elche I also saw many of the fine Apricot trees before described, growing like oaks, in the open fields, and covered with fruit, nearly ripe. The Apricot clearly likes dry warm soils of a silico-calcareous nature. This fact, perhaps, explains my great success with Apricot trees on walls (the Moor Park), in my hot sandy garden in Surrey. I each year raise on a south wall, with the assistance of spring protection, the most luscious and the largest Apricots I have ever seen. I have totally failed to obtain a crop with these same trees in the rich artificial loam of a large glass orchard house.

At Elche, we dined at a Posada, or Inn, which exem-

plified in its construction Spanish ways as applied to a warm burning climate. The centre of the house was like an immense barn, with a very heavy roof, and in one corner was a deep well of pure cool water. As in the Desert of Sahara, in these sunburnt regions, near mountains, there is often water in lakes, rivers, and springs, below the surface, although the latter is parched and sunburnt. If the water can be reached, man settles round the precious well, and his labour irrigates the country around, producing luxuriant vegetation wherever the water can be applied. But the labour is great, a fact which limits its fertilizing powers to a small area. No doubt many of these districts might be fertilized by Artesian wells. In this barn-like disembowelled house or cavern were several carriages and carts drawn up in a corner, many implements of husbandry, and all kinds of odds and ends. It was evidently the kitchen, parlour, and hall, as well as washhouse, store, and lumber room; and a very pleasant cavern house it seemed in the heat even of early May. Behind was a yard, and behind that a roomy stable, with standing for a hundred horses, or rather mules, the animal generally used in Spain on account of its hardihood and sobriety.

Between Elche and Alicante I found the same cultivated barrenness, the same brown naked fields, dotted with a few stunted Caroubas, Olives, and Figs; even on arriving at Alicante the desolation of thirst did not cease.

ALICANTE.

Alicante has a good port, in a good bay, which brings commerce, but it has no valley, no river, only one good spring, which never dries up, and does not even much diminish in years of drought. This spring, situated about a mile from the town, is, I was told, really a fountain of life for Alicante, inasmuch as it supplies the thirst and "occasional" ablutions of a town of 31,500 inhabitants; with the assistance, however, of large rain-water tanks used for retaining rain when it does fall. The town itself after this winter's drought was like Carthagena, a

mere crater to a volcano, without vegetation, with the exception of a few stunted Acacias, Caroubas, and other trees with sparse foliage, planted along the sides of the main road, each in a deep circular bricked hole some four feet in diameter, for irrigation. There was an attempt at a garden in a square on one side of the town, where Monthly and Bengal Roses, Poppies, Antirrhinums, Delphiniums, and Iberis, with Virginian Stock, formed the flower-beds, without a trace of winter gardening. From the castle rock we saw one green spot in the town, the garden of the governor, who evidently gets the lion's share of the water. The coast is rocky, and the sea and bay are picturesque.

The town itself is open, not surrounded by walls, and the principal streets near the port are wide and clean. It lies at the south-eastern base of a rock 400 feet high, on which is perched the castle, which thus completely commands the city. There is a large hotel, the "Fonda del Vapor," with an obliging host, at which we were made quite comfortable. This hotel occupies an extensive building, formerly a custom house. It is opposite the port, an objection, as the ways of the labourers of a southern seaport are not always pleasant to witness.

The town is so dusty, so sunburnt, so arid, so dried up, so devoid of vegetation, and consequently so desolate, that a residence here for months would be a sad penance. Otherwise Alicante appears to me decidedly the most favourable health station that I have seen on the south-eastern coast of Spain. The climate must be mild, sunny, and dry, and there are no rice grounds to produce malaria as at Murcia or Valencia. There is a *Huerta*, or irrigated valley, it is true, connected with Alicante, but it is situated at some distance north of the town. I had no time to visit it, but was told that in this valley, as in those of Murcia and Valencia, owing to the presence of water, vegetation never flags, and the crops follow each other in rapid succession all the year round.

Indeed, the entire province of Murcia, from Carthagena to Alicante, must be exceptionally favoured in winter—dry, sunny, cool, and bracing. Its vegetation indicates the same climate characteristics as those that obtain on the

Genoese undercliff, great heat in summer, exceptional dryness and mildness in winter. Thus we have in both regions, growing luxuriantly, Date Palms, Lemon, Orange, Carouba trees, Opuntias, Aloes. The dryness of Murcia must, however, be greater than that of the Riviera, inasmuch as the fertility of the one is entirely owing to irrigation, whereas in the other it results in a great measure from natural rainfall. The dryness of Murcia is so extreme that the entire province resembles the Desert of Sahara, where nothing grows spontaneously, except in the beds of torrents, and on the margin of springs, or of lakes, which are dry part of the year. I was greatly struck with the sudden change from Algeria to Murcia: I left Algeria a very garden of verdure, of fertility, and found Spain "the desert" Algeria is so erroneously presumed to be.

I believe that all forms of disease requiring such a climate, all that I have enumerated in the medical chapter on the Riviera as likely to benefit by mild, dry, bracing winter weather, would do well in any part of Murcia. I do not say "equally" well, because it remains to be proved by actual experience whether extreme dryness, an atmosphere where it often does not rain twice in the winter, may not be too stimulating; periods of long drought in winter at Mentone have often appeared to me to be so. But to test this question, and for Murcia to be a safe winter refuge for great invalids, there is still much wanted. An English or foreign company with a large capital, should build a good hotel in the suburbs of Carthagena, Murcia, Orihuela, Elche, or Alicante, for they must be all good stations as regards winter climate. A choice situation should be selected, an abundant supply of water obtained by means of an Artesian well, a nice flower and shrub garden therewith created, and the decencies and comforts of northern civilization secured. Were there such an hotel, I should be quite willing to spend a winter there myself. No doubt there are in many regions of Murcia subterranean watercourses, and springs capable of being tapped and brought to the surface if proper means were employed, and thus the area of its fertility might be greatly extended.

The very costume of the inhabitants of the province of

Murcia indicates a dry mild winter climate, as that of the inhabitants of Algiers indicates a moist cool one. The latter wear one, two, or three thick woollen bournous with hoods, which envelop them from the head to the feet. The former merely wear linen drawers, ending a little below the knee, and a linen tunic, which is fastened by a girdle at the waist, and descends nearly to the knees. It is a kind of Greek costume. The head is covered with a species of turban cap, and the soles of the feet are slipped in rope sandals, which leave the feet naked, and would in no way defend them from wet or mud. On holidays, and no doubt generally in winter, they wear on their shoulders a many-coloured scarf, or *manta*, as it is called, as the Highlander wears his plaid.

ALICANTE TO VALENCIA.

The railroad by which we left Alicante for Valencia goes all but due west for about fifteen miles, over calcareous mountain slopes, exactly of the same character as those by which we entered Alicante. The country bore precisely the same stamp of dryness—of vain attempts to raise by careful and laborious husbandry a grain crop. The fields were all limited by the same little banks of earth some eight or ten inches high, to keep in rain that had never come. It was painful to think of the loss, and probably ruin, entailed on the cultivators of the soil by a succession of seasons such as the present, for the stunted Carouba, Olive, and Fig trees showed that the drought, although greater this year than usual, was not an exceptional event. Indeed what I have seen in this region, in Africa, and elsewhere in the south of Europe, has led me to the conviction that with all the uncertainty of our climate, our agriculturists are better off than those in many regions usually considered more favoured. Wherever a deep well can reach water, there we found one, with a homestead, a few trees, and a sparse cultivation. We constantly saw, here and elsewhere, the entire family, father, mother, children, at work, drawing water, by means, not of bucket and rope, but of a long pole worked as a lever. At an elevation of 1000 feet, we

reached a valley through which flows the little river that, nearer the sea, fertilizes the Palm forests of Elche. With control over water, at once commenced determined efforts at cultivation. Fig, Olive, Almond, and Carouba trees, and patches of cereals, occupied the valley, whilst Vines extended over the hill-sides. Gradually, as the elevation became greater, the valley was too steep, and the course of the small river too torrential to admit of irrigation on an extensive scale; the Fig, Olive, and Carouba trees were scantier and smaller, and Vines, all but alone, occupied the southern slopes of the hills.

The soil became very stony and poor, so that, although the Wheat crop, here and there, had come out of the ground, it was only three or four inches high, meagre and thin. About thirty miles from the shore, at an elevation of some 2200 feet, we reached the tableland of central Spain. The soil continued to be of the same character, a thin vegetable loam lying on calcareous rocks, until we came to the junction of the Madrid Railway, at Alcanzar, 2200 feet above the sea-level. We were then in the high plains of central Spain which form Old and New Castile. Not a tree was to be seen in any direction, nothing but naked plains, mountains bounding the horizon, and fields in vain tilled with the plough for Wheat. A more wretched-looking district, agriculturally, I never saw. The Wiltshire downs are fertility in comparison; the Carouba, Olive, and Fig trees had abandoned us, and were replaced by nothing, neither tree nor bush.

Our progress was so slow that we had plenty of leisure for observation. The Spanish railways are only made with one line of rails, and the rails themselves are much lighter than in England or France. Consequently, frequent stoppages take place, and the speed is not greater than about fifteen miles an hour. Although the railways, which now connect nearly all the principal towns with Madrid, have rendered travelling in Spain infinitely more commodious than formerly, it is still very tedious. The carriages are as good as our own.

At Alicante we left (May 6) a temperature of 76° by day and 70° by night, and a midsummer vegetation. When we

arrived on the central plains we had gone back to April. The thermometer was 60°, the wind cold, the cereals only just appearing above the ground, and the few trees we saw at the stations, principally Acacia and Melia Azedarach, just coming into leaf. The latter is very commonly grown for ornament in Spain, and is called Paraiso in Andalusia. It has a pretty flower, very much like the Lilac, but its foliage is thin, so that it really does not deserve the esteem in which it is held; probably from its indifference to drought and dryness. After continuing our route for some hours in a north-westerly direction through this bleak, treeless, calcareous plain, without farms or houses, occasionally stopping at villages or small towns, formed by an agglomeration of sunburnt dwellings huddled on the top or side of a hill, we turned eastward, and began to descend towards Valencia.

As soon as the brow of the mountain was passed, and a south-eastern exposure was obtained, even at an elevation of 2000 feet, as indicated by an aneroid barometer, stunted Olive and Fig trees, with Vines, made their appearance. The hill-side presented also in every direction deep water-worn ravines, the beds of former rivers and torrents. I say "former" because it is clear that now no considerable body of water ever flows through them, inasmuch as in the very beds of these ravines are planted Fig and Olive trees, which any considerable rush of water during the previous twenty or forty years would clearly have carried away. These dry tree planted watercourses clearly imply a change of climate, probably the result of the forest denudation of the plains I had crossed in the morning.

In former historic days these plains were covered with forest trees, which the inhabitants have ruthlessly destroyed, partly for fuel and building, and partly in compliance with an insane but universal prejudice. The Spanish peasantry think that trees harbour birds, and that as birds destroy the cereals, the only way to get rid of the birds is to cut down the trees. Thus have they, in the long run, changed the climate of Central Spain, modified the natural rainfall, and made the central plains only a degree less dry than the rainless eastern coast.

As the line descends, the Olive and Fig trees become larger, and Carouba trees appear, until at about 1200 feet elevation the scene changes into one of exuberant fertility. Water—water in abundance, a real river—has been reached; systematic, scientific irrigation, a gift of the Moors in times gone by, carries the water everywhere; and the rich vegetation of the irrigated valleys of Murcia and Orihuela is again reproduced, even in a more grandiose style. The rail reaches at this elevation the southern boundary of a triangular plain, or sloping valley, with its base to the sea eastwards, through which three small rivers run from the central mountainous tableland to the sea. Wherever their waters can be carried by irrigation, the sunshine and heat, combined with protection from northern winds and zealous traditional cultivation, produce the most wonderful fertility. This fertility increases as we descend to the sea, as the conditions of heat and protection increase, as the alluvial soil becomes deeper, and as complete and repeated irrigation becomes easier.

The vegetation is exactly the same as in the valley of Murcia. Large Olive, Fig, and Carouba trees, the latter always in the driest situations, the least accessible to irrigation, often magnificent trees like Oaks; Apricot trees of the same size, really beautiful to look at, but covered with second-rate fruit; Vines on the hill-side; Cereals, Beans, Peas, on the irrigated levels, the former three feet high, thick, luxuriant in the ear. As we approach Valencia there are orchards of Pomegranate and Orange trees, the latter spoilt, as at Murcia, by being grown in bushes, cut down close to the ground and allowed to grow up with a dozen stems, like large Portugal Laurels. I had heard so much about the Orange groves of Valencia that I was greatly disappointed; these bush trees are not to be compared for beauty to the large Orange trees of other sheltered regions of the Mediterranean. I presume they are cultivated in this way as a protection from the wind, which Orange trees cannot stand, especially if it comes from the north, north-east, or north-west.

As the lower levels are reached a new feature appears—extensive Rice fields. These fields, on the river side, are

surrounded with mounds of earth some eighteen inches high. The soil is ploughed, water is let in to soak it thoroughly, then the Rice is sown, water is again let in to the depth of six inches, and the seed ploughed in a second time under the water, the men and mules working with the plough knee deep. The water is allowed to remain on the land, renewed as it sinks in, and the Rice comes up as a water plant. From the cathedral tower of Valencia the entire expanse of this fruitful region is seen, extending down to the sea. Valencia is three miles from the coast, and the entire district is dotted with these Rice grounds. They are a serious drawback to the public health, giving rise, it is said, to much intermittent fever in the autumn.

Spanish writers, and travellers in general, go into raptures about the wondrous beauty of these fertile valleys, but I must confess that I cannot join with them. Rice, corn, beans, scattered oil-producing Olive trees, silk-producing pollard Mulberry trees, Pomegranates, Vines, Orange bushes in rows like soldiers, are all very well in their way as evidences of cultivation and of a fertile soil, but unquestionably they no more conduce to beautiful scenery than does the cultivation of the market gardens round London or Paris. Indeed, these far-famed valleys are market gardens, nothing more, and bounded as they are by barren, naked, calcareous hills, they are inferior in natural beauty to any of the spurs of the Atlas ranges in Algeria, clothed with Ilex, Thuja, Mountain Ash, Cytisus, Lentiscus, or to any mountain vale in England in summer time. In winter, too, as many of the trees—the Fig, the Mulberry, the Apricot, the Pomegranate, the Vine—are deciduous, they must look nearly as naked and desolate as valleys in old England, more so than our conifer clothed districts.

VALENCIA.

Valencia is one of the largest cities of Spain, with a population of 108,000. It covers a large area of ground, and is the centre of Spanish civilization on the eastern coast. It has all the resources of a great city, including very tolerable hotels. Although the winter climate is no

doubt exceptionally good, it cannot, however, be considered a health city. The streets are very narrow, mere lanes, and the hotels are all situated, for convenience, in the very centre of the town, or in the small central squares. They are built and managed for the reception of commercial travellers, and of the travelling public in general, not for that of health tourists, who are not wanted, expected, or prepared for. The large commercial cities of the Continent, such as Barcelona, Valencia, Malaga, Marseilles, Naples, may be compared to Bristol, Liverpool, Glasgow in England. They are not health cities, but social and commercial centres, in which invalids and sick people are not thought of. Health towns, such as Cheltenham, Tunbridge Wells, Torquay, Pau, Nice, and Mentone do not exist in Spain. Thus although the winter climate is excellent in some of these cities, real invalids cannot comfortably or prudently remain because there is no provision for them. Then the Rice grounds round Valencia are as much against a residence in the suburbs as the confined, close, stuffy streets are against a residence in the interior of the town. Lodgings might be had, I was told, on the Promenade, the *Alameda*, but how far the double influence would be avoided, and how far Spanish lodgings could be made comfortable, I cannot say.

I would add, that as regards climate, although I believe that the winter climate of Valencia is dry, sunny, and mild, I much question whether it presents any advantage over the much more accessible Genoese Riviera. Indeed, from the examination of the vegetation, I found reason to conclude that the winter protection from north winds is less, and the winter cold greater at Valencia, as at Murcia.

Whilst at Valencia I went over the Botanic Garden carefully. It appears to be more viewed and directed as a pleasure garden than as a scientific establishment, but even as such was interesting. The plants in flower (May 6) were the common flowers of our English gardens for June and July; Monthly and Bengal Roses, with a few hybrid and Tea Roses, Delphinium, Antirrhinum, Iberis, Iris, Stocks, Silene, Jasminum revolutum, Ranunculus, Eschscholtzia, Sweet William, Poppies, Verbena, Spiræa, Habrothamnus, Pæonies, Nasturtium, Pinks, Aquilegia, Petunia,

Carnations, Collinsia, Viburnum, Convolvulus minor, Tritonia crocata, Oak-leaved Pelargonium, Virginian Stock, Aubrietia, Hydrangea. There was a glass-house, much neglected, in which I found Bougainvilleas, Lantanas, Vincas, Heliotropes, Pelargoniums, Cinerarias, Coleus, as at Murcia. In this glass-house were all the Palms, and Cycadaceæ, which are grown in the open air on the Genoese Riviera, with the exception of some Chamærops humilis and Latania Borbonica, planted out in a very sheltered spot. Thus it contained Corypha Australis, Caryota, Dion edule, Thrinax, Cycas revoluta, Cordylines, Dracænas, Yuccas, Ficus repens, Pereskia, Aralia, Philodendron, Russelia juncea, Cyperus alternifolius, Banana. There were Abutilons and Oleanders in the garden, but not in flower. It is from the above facts that I feel authorized to conclude, that the winter cold is greater at Valencia than on the Riviera. If it were not so, why should plants that we can cultivate with ease in the open air be placed in glass-houses, and why also should the open gardens contain little else but what is found in the gardens of more northern European regions? This can be easily understood. The east coast of Spain, favoured as it is in climate, is bounded, north and west, by high mountains, and the towns of Murcia, Alicante, Valencia, are at some distance from the foot of these mountains—that is, from their protection—so that the cold winds fall down upon them. The Genoese Riviera, on the contrary, is at the very foot of the mountain wall that protects it; and the cold winds, passing over, leave it basking in the south sun. At Valencia and in this region generally, the Lemon tree is only grown exceptionally, in very sheltered and warm situations, although in such localities it succeeds thoroughly. Nowhere did I find it grown in large orchards facing the sea, as on the Riviera, between Nice and San Remo. There were some large timber trees in the garden, which are often met with on the promenades in these regions of Spain: Paulownia imperialis, with elegant blue terminal flowers; Celtis australis, a large beautiful tree; Diospyros Lotus, Cratægus melanocarpa, Gleditschia triacanthos, Sophora Japonica, Schinus Mulli, Melia Azedarich.

I had now travelled over a considerable portion of the south-east coast of Spain, from Carthagena to Valencia, and had studied the vegetation and climate with intense interest. I had read of rainless tracts, but I had never seen such an one before, not even on the borders of the Sahara, and I was told it continues to Barcelona. If the rivers which descend from the mountain tableland of Spain were cut off, and if this sub-Alpine coast were left to the rains of heaven, it would clearly be a desert. It would be like the regions of the Desert of Sahara beyond the reach of the torrents that, falling in winter on the most southern ridges of the Atlas, run down their southern slopes, sink into the sands, and give rise to the oases by reascending to the surface.

The fact was clear, but what is the cause? Why should the east coast of Spain be nearly as rainless as the Desert of Sahara? It can easily be understood that the high mountains that fringe the western coast of Portugal and Spain should arrest the moisture of the north-west and south-west Atlantic winds, but why do not the north-easterly winds, which are reigning winds in winter in the Mediterranean, and which bring torrents of rain to Algeria, also bring rain to the eastern coast of Spain? I think my previous journey to Algeria gave the key to this singular fact in physical geography.

I believe that these north-easterly winds are actually sucked in by the Great Desert of Sahara before they reach the Spanish shore. The vacuum formed by the rising into the upper regions of space of the air heated by the sandy surface of the Great Desert is attended with a rush of air from the Mediterranean, sucked in to fill its place. From whatever quarters the wind comes, when it reaches the southern regions of the Mediterranean it feels the influence of the African Desert, and rushes south, bringing moisture to Algeria, to the Atlas mountains and valleys, and leaving the eastern coast of Spain in dry calmness. This is probably the real explanation of the calm we met when forty miles from the coast, on crossing from Oran, and not the protection of Cape de Gata. The wind that opposed our progress on leaving Oran was rushing down to the Desert,

and we left it behind us. Thus is explained a saying at Alicante that the bay is so habitually calm that it is a "woman's and child's sea," as also the fact of the Marseilles and Algiers steamers always seeking shelter on the Spanish coast in storms.

VALENCIA TO CORDOVA OVER THE TABLELAND OF SPAIN.

The journey from Valencia to Cordova by rail takes the traveller into the centre of Spain, and of the high tableland (New Castile) in a westerly direction, then descends due south, crosses the Sierra Morena, and follows the valley of the Guadalquivir. For many hours, for hundreds of miles, the line crosses the monotonous calcareous plains already described, treeless and houseless, with no cattle to enliven the scene. The entire region seemed cultivated, but half or two-thirds was bare of all crops, lying fallow. This is, it appears, the Spanish system of cultivation, as with us ages ago. The land, naturally poor, with a thin soil lying on a calcareous base, very like the chalk downs and fields of Wiltshire, seldom or never manured, is allowed to lie fallow one or two years out of three, and thus to recover itself by the unaided efforts of Nature. The owner supplies the seed, and he and the tenant divide the crop. So in the years of drought or inactivity, as there is no rent paid or received, tenant and landlord both get on, if they can only keep body and soul together. Moreover, they both seem to be quite satisfied if this can be accomplished, and with their abstemious habits very little suffices.

The fact, too, of the entire population being aggregated in towns, as in the Middle Ages, when men had to unite for mutual protection, at a distance from the seat of their labours, is a very great drawback, a national one. The men, with their southern fear of moisture, stay from work if it rains, or appears likely to rain, for festivities, for any excuse; the women gossip all day, the children play about in the streets. Thus the peasant squanders his own time, and does not get that assistance from his family which he does when they all live in the centre of the field of labour.

No cattle are seen, and very few are kept on these plains,

and I was told that the value of manure is so little known that the peasantry require paying to take it away from the towns. As may be supposed, with such a soil and such views of cultivation, the rising crops of cereals, only from two to four inches high, were very thin, poor, and miserable, offering but little promise for the future. Even at this high elevation, from 2000 to 2500, or 3000 feet, there had been but little rain, and further rain, before the summer heat sets in, was anxiously expected. As already explained, the rainfall from the Atlantic winds is arrested by the high mountains on the western coast of Spain and of Portugal, whilst the easterly winds seem scarcely to reach this region of Spain, or to bring no rain with them. The destruction of the timber adds no doubt to the drought, as trees are well known to attract rain, in plains as well as on mountains. As to temperature, we had gone back to early April in England, and the cold was positively bitter, very trying after a month in Algeria and south-eastern Spain. There was not the vestige of a southern climate in the aspect of Nature.

As the railway descending due south approaches the Sierra Morena mountains, the direction of which is east and west, the geological nature of the soil changes. The calcareous soil and rocks are replaced by a siliceous soil, by schistic and sandstone rocks. With this change of soil at once appears a change in vegetation. The change is observed both north and south of the Morena mountains, which are crossed at first through picturesque gorges, and then by a tunnel at an elevation of 2600 feet. The familiar shrubs of the Corsican and Atlas granitic sandstone and schistic ranges reappear. The Cistus or Rock Rose, the Broom—the common European form without spines, not the prickly Broom of the above regions; Thuja and Juniper Bushes, the Maritime and Aleppo Pines, Myrtle, Lentiscus, Mountain Lavender, and on the south side great numbers of the Chamærops humilis Palm. The Tamarisk fringes the river sides, and the Oleander is often seen along with it. Thus in Andalusia the vegetation of Northern Africa, of the Atlas ranges and rivers, is reproduced, especially along the course of the

Guadalquivir, and more decidedly than in Corsica, where, as stated, I never saw the Tamarisk, Oleander, nor Chamærops. It is singular that the Chamærops Palm should be described as peculiar to Algeria, for in this part of Andalusia it is as common as Gorse on English heaths. I saw thousands of acres covered with this dwarf Palm, growing luxuriantly in tufts. Indeed it evidently propagates itself spontaneously wherever the soil in the Guadalquivir valley is too poor to tempt cultivation. As I had seen it likewise in the basaltic soils near Carthagena and Murcia, I have no doubt that it is to be found all over Southern Spain in siliceous districts, just as in Algeria, where it disappears the moment the soil becomes calcareous. This is another evidence of the geological union of Africa and Europe in former days.

After passing the Sierra Morena the line descends rapidly, and soon reaches an elevation of 600 or 700 feet only. Then with a southern exposure, protection from north winds, more rain than on the eastern coast, and a sandy soil, vegetation becomes much more luxuriant than on the elevated central plain that we had just left. Still I saw nothing to warrant the raptures of poets and travellers when describing the far-famed Guadalquivir valley. It seems to me that these raptures are rather the result of comparison with surrounding nakedness and sterility than of any actual exuberant fertility of the valley itself. Although there is a good sized river rolling its precious waters in the midst of a wide and level plain, there is no irrigation. This at first puzzled me, for the entire region was many centuries in the hands of the Moors, who are the people who made and established the irrigation works of the really luxuriant valleys of Murcia, Valencia, and Granada. Indeed Cordova, which is built on the river bank, was the centre, the capital of their dominion. Then it occurred to me that it may be of but little use to irrigate a poor sandy soil, as the water must all sink through it, and do no good commensurate with the expense incurred. The valleys named above, where such extensive irrigation works have existed for centuries, and where they secure exuberant fertility, all principally contain lime soils.

Where the sandy or gravelly soil through which we passed was cultivated, the crops were thin and poor—indeed wretched, and that without the excuse of altitude. Side by side with these cultivated regions were wide moorlands covered with bush Ilex, Mountain Lavender, Broom, and the Chamærops Palm, which no doubt in former days extended over the entire region, and yet remains, as we have seen, on the poorer uncultivated soils, just as Heather and Gorse remain with us. Still the country had a verdant, smiling look. In the vicinity of villages and towns, generally built near the river, in regions where the alluvial soil is deeper, are groves of Olives, Figs, Pomegranates, and as we neared Cordova occasional Palms—the Phœnix dactylifera—were seen. The hill-sides in the distance were no longer naked, as in the lime regions, but clothed more or less with Ilex, Cork Oaks, Pines. Indeed, poor, sandy, gravelly soils, when covered with very little vegetable soil, are everywhere, even in dry, warm climates, more verdant, more luxuriant with their peculiar vegetation than lime rocks, hills, or soils under the same conditions. The vegetation that clothes these soils bears drought better, also, than that which lives in rich alluvial soils, especially when they rest on clay. The reason is no doubt that in sandy, gravelly soils the roots of the plants, shrubs, and trees can go down all but any distance in search of moisture and find it, whereas on lime soils and rocks, or on clays, when they reach the subsoil they stop short, and have to depend only for nourishment and moisture on what they find above.

Thus I remember, in the very dry summer of 1868, being very much struck by the difference between the state of the vegetation of Surrey and Middlesex. In Surrey, where my country residence is situated, and where much of the soil is sand or gravel, the Weymouth Pines, Spruce Firs, Scotch Firs, Birch, Beech, Oaks, Chestnuts, Heather, were perfectly healthy and green in August, after three months' drought. There was no perceptible difference as compared with other years. But when I crossed the river into Middlesex, on the rich alluvial soils lying on clay, I found a totally different state of things. The ground

vegetation was parched—all but reduced to hay, and the trees were losing their leaves as in November. Another reason may possibly be adduced, as my gardener suggested. Our Surrey plants are like poor people, accustomed to poor fare, so when a famine comes they bear privation better than their richer Middlesex neighbours, accustomed to a richer and better dietary.

CORDOVA AND SEVILLE.

At Cordova and at Seville, both on the Guadalquivir river, latitude 37°, the same climate and vegetative conditions appear to prevail as on the south-east coast. The Date Palm is seen here and there, grown for ornament, not for fruit, which no doubt does not ripen. Orange trees grow splendidly in courtyards and gardens, protected by high walls from the north winds, as in the courtyard of the cathedral and in the gardens of the Alcazar at Seville; but they are not seen, as trees, in open, unprotected spaces, exposed to the north. In the public gardens, which are numerous, I found (May 11), the common garden flowers so often enumerated, about six weeks earlier than in the north of Europe; but there was very little, if any, evidence of immunity from cold nights and cold winds in winter. There were Bengal, monthly, and common white Roses, but few hybrids or Teas, Delphiniums, Hollyhocks, Verbenas, Phlox, Pelargoniums, Aquilegia, Lilies, Carnations, Thlaspi, Sweet William, but no Lantanas, Abutilons, Daturas, Wigandias, and winter Salvias. These gardens, however, must be nearly as naked in winter as our own, or more so, as the trees grown are nearly all deciduous, meant for summer shade. Clearly, the inhabitants of these regions accept the winter as winter, and have no idea of deceiving the eye, no wish to escape from its influence on the landscape by planting evergreens. The very summer-like look even of the Genoese Riviera is owing to the fact that the complete protection from northerly winds admits of a southern evergreen vegetation —Olive, Lemon, Orange trees—which exists all but alone.

There was much to see, much to enjoy in these two

great cities, but I must leave the description of their charms to pleasure tourists. My business was merely to find out by actual observation, by the analysis of the vegetation, how far they are fit to be selected as a winter residence by confirmed invalids. Viewed in this light, the verdict, without any hesitation, is unfavourable. For persons slightly out of health, who wish to muse away a winter in a southern land, in the midst of the memories of former days, and who are disposed to select as the object of their studies and meditations the Moors and Saracens of Old Spain, their monuments, their habits and customs, which survive to this day, Cordova or Seville will do very well, and will reward the fatigues of the journey. There is immunity from actual cold weather, much sunshine, and the novelty of Spanish life and ways, in addition to the glamour of the past.

The real invalid, however, intent on finding the best winter climate he can, in order to escape from severe suffering, or to save life, can do much better. All the disadvantages enumerated as pertaining to Valencia and Murcia, are equally rife at Seville. The streets are narrow, the hotels are all in the centre of the town, the weather must be often cool, not to say cold, and a considerable amount of rain falls in the course of the winter, owing to proximity to the Atlantic. Both Cordova and Seville are in the plainlike valley of the Guadalquivir, which throws itself into the stormy Atlantic Ocean a little to the south-west.

None of the towns of the south or Moorish region of Spain present any grandeur, anything worthy of notice in an architectural point of view, with the exception of their cathedrals. That of Cordova is a magnificent Moorish mosque, still presenting eleven hundred Saracenic columns, although two hundred were destroyed, with very bad taste, under Charles V., to make way for a Gothic addition, a nave, very grand in its proportions, but sadly out of harmony with the mosque to which it was dovetailed. The Seville cathedral is one of the most magnificent monuments of Gothic architecture that I have ever seen, from the immense height of the columns and of the roof which they

support. The Alcazar, or the remains of the Moorish Palace, is worthy of all praise and admiration.

The towns themselves, on the contrary, are mean in the extreme. They are composed of small, whitewashed, two-storied houses, enclosed in tortuous streets from ten to fifteen feet wide. Most of these streets are quite inaccessible to a carriage, and in those that are so used, two carriages can only pass each other at foot's-pace.

Owing to the diminutive size of the dwelling-houses, and to the narrowness and insignificance of the streets, the grandeur and stateliness of the Seville cathedral, produced, as did that of Murcia, a peculiar impression on my mind. It would seem as if the town, with its human inhabitants, had been nothing, whilst religion and the church had been everything, towering as the latter does immeasurably above humanity. No doubt this was the impression meant to be conveyed, and who would do otherwise than acknowledge, with humility and reverence, the correctness of the antithesis, had the religion of those who created these magnificent temples cast a truly Christian mantle over the country. Unfortunately, it was not so at Seville. Whilst gazing on the grand cathedral it is impossible not to recollect the gloomy fanaticism that reigned in its walls for centuries, under the cloak of religion. The horrible tyranny of the Inquisition, the terrible human sacrifices that bloodthirsty institution periodically demanded, with its frequent "auto-da-fé," and its dungeons filled with victims during centuries of oppression, all rose bodily before me. In no part of Spain were greater horrors perpetrated under the mask of religion. This gloomy religious tyranny dwarfed the intellect of the Spanish nation, destroyed its national prosperity, and made it what it is at present, a mere shadow of the past. Now that these shackles have been cast off for ever, now that mental as well as political freedom has been attained, we may hope that a glorious future is opening out for Spain as well as for Italy. As Wordsworth truly says in the verses quoted at the head of this chapter, there are Forests of men, good and true, yet to be found in Spain. The nation is sound at the core, and, once freed from the trammels of superstition, ignorance, and bad government, will no doubt

rise in the scale of humanity, and again assume its rank among nations, but time is required.

The Spaniards are a race of mountaineers, hardy, sober, abstemious, enduring of fatigue, kind, and cheerful. They have only been too true to their selfish, fanatical rulers, who have constantly led them to death in a bad cause, have constantly traded on their simple-minded devotion and affection to religion and to the king. By supporting a corrupt court for many years, the clergy have lost their hold on the respect of the nation, and have fallen with the court, and that most deservedly.

Nearly all the best houses are built on the Moorish model, as at Algiers. They have a central court or garden, which is often adorned by a fountain as well as by flowers. The life of the family is centred in and around this court, or interior garden. In summer, an awning is drawn over from above, and it becomes the general sitting-room during the hot weather.

We received the greatest kindness and civility from all classes of Spaniards, both in the towns and on the roads. All we met seemed to vie with each other to help us on. We were more especially struck with this cordial civility in Seville. Owing to the tortuous nondescript character of the streets, we generally lost our way when we went out without an interpreter, and all but invariably the first person of whom we asked the road volunteered to take us home. On one afternoon, I and my friends, three in number, all went out separately; we all four lost our way, and we were all four brought back to the hotel by four different persons, the first to whom we appealed.

MALAGA.

From Seville I took the railway to Malaga. The line passes in a south-easterly direction across some hilly fertile plains, then ascending through a mountainous district, pierces the Sierra Nevada by a series of deep cuttings and tunnels. On emerging, it descends rapidly into a cultivated plain, at the edge of which, on the southern coast of Spain, is Malaga.

I was much disappointed with much vaunted Malaga.

It is a close, confined Spanish commercial seaport, with 110,000 inhabitants packed into a very small area, the streets being from five to ten feet wide only. The port is dirty, the shore contaminated with all kinds of filth, both inside the town and for some distance from it. The hotels are gloomy and dingy, and situated on a miserable promenade —the only one in the town. This, the Alameda, is merely 300 yards long by forty broad, planted with double rows of shabby deciduous trees, Elm, Acacia, Sophora Japonica, Melia Azedarach and small Planes, so that in winter it must be quite naked. There are some noseless busts, and any number of mendicants and gutter children. This is the resort, the solace, of the poor invalids condemned for their sins to winter here.

The only real garden within three miles of the town is the English cemetery, on a burnt-up hill-side, where even the Pelargoniums had scarcely any foliage, owing to the long drought, merely a few terminal leaves and flowers. Here at last there really was the evidence of a very mild southern winter, such as we have at Mentone, in the presence of Lantana, Bougainvillea, Carouba, Schinus Mulli, Heliotrope, Aloe. But the evidence of exceptional winter mildness was still more marked in a garden belonging to an American merchant, about three miles from the town, at the base of the mountains which, rising due north behind Malaga to a height of 3000 feet, protect it thoroughly from northerly winds. Here I found, in full flower, Euphorbia jacquiniflora, Russelia juncea, Lantanas, Abutilons, Habrothamnus, Salvia Horminum, gesneræflora, Bouvardia flava, Erythrina crista galli (Coral tree), Gaillardia, Pittospermum; indeed, the same winter flowers and vegetation as at Mentone. I may add that Malaga is the only place in Algeria or Spain where I found the same evidence of winter mildness or entire immunity from frost as on the Genoese Riviera from Nice to San Remo. The winter climate of Malaga must present the same exceptional mildness, but the social and sanitary conditions are vile, so bad as entirely to neutralize the climate advantages; unless one could have the country house I saw, or a similar one, miles from the town, at the base of the ravine or gorge by which Malaga is reached by

rail. In descending through this valley, I saw very fine Orange trees.

Such being the case, the climate of Malaga being, as proved by its vegetation, exceptionally mild and dry, without losing the bracing character that pertains to all "dry" European climates in winter, it would seem that the encomiums conferred upon it by many writers are justified. And so they would be if Malaga were a healthy city, or were there healthy suburban residences or hotels, in good situations, in which invalids could reside.

Unfortunately, however, none of these conditions are realized. The city is situated on a sandy plain on a dead level, its streets are even narrower and closer than those of Seville or Valencia, and its sanitary condition is decidedly worse. It may be thought that a mere flying visit does not entitle me to speak so authoritatively on the subject, so I will quote other data.

There have been five epidemics of cholera at Malaga since 1832, when it first appeared in Europe, and none of the densest and most unhealthy centres of European population have been more afflicted. It is a well-known fact that cholera has constantly chosen the most populated and most unhealthy cities in which to exercise its ravages, and the fact of five epidemics of cholera having occurred in any locality during the thirty-seven years that have elapsed since it first appeared in Europe must be fatal to a reputation for salubrity.

I would, also, refer my readers to the most recent writer on the climate of Malaga, Dr. More Madden, in his pamphlet entitled "The Climate of Malaga in the Treatment of Chronic Pulmonary Disease. Dublin, 1865." At page 18 Dr. Madden says very graphically and explicitly:—

"The hygienic condition of Malaga is as defective as it can well be. In a great many of the houses there is no provision for sewage of any kind; and even in the more civilized part of the city, in the hotels on the Alameda, the drainage is very bad indeed. The main sewers, which run under the principal streets, are choked up by the decomposing accumulation of years, and being provided with

immense square openings, through which the dirt and rubbish are thrown into them, in the centre of the streets, the mephitic gases evolved below freely escape into the atmosphere of the narrow lanes of the city. The bed of the Guadalmedina is really the main sewer of Malaga; and as for nearly ten months annually it is little more than a wide dry bed of gravel, being dependent on the torrents in winter for its purification, the odour it exhales in warm weather renders a residence near it as disagreeable as it is unhealthy.

"The connexion between epidemic disease and bad sewage is, I think, very well illustrated in Malaga, which has at all times been remarkable for the prevalence of zymotic disease. I have collected from the older Spanish writers notices of no less than twenty-two epidemic pestilences, some of which almost depopulated the city, between 1493 and 1804. The earlier of these seem to have been epidemics of genuine Oriental plague, and the latter generally assumed the form of yellow fever. Of late years, since 1834, these pestilences have not appeared, but their place has been taken by Asiatic cholera, which has several times ravaged the town."

The above most inviting description of Malaga is written by the author of a recent work on climate, who, after travelling all over Europe to find the best winter sanitarium for the consumptive, has fixed on this most salubrious town as the sought-for Eldorado. So that this chosen European *habitat*, in former and present times, of the plague, yellow fever and cholera, is to be selected to restore the health of our poor countrymen and women, already debilitated by disease, constitutionally broken down, and a prey to an organic malady.

Surely, as I have repeatedly stated, it is mere wanton trifling with human life to send such sufferers, with a view to the recovery of their health, to winter in large, unhealthy southern towns like Rome, Naples, and Malaga, foci of malaria and of epidemic and zymotic diseases. Does not the simplest common sense tell us that invalids, with the seeds of death in them, should not be located for months in the centre of towns where even the healthy cannot live, and die annually at the rate of thirty or more in the

thousand? Singularly enough, I believe I am the first, and as yet the only writer on climate, who has recognised and forcibly insisted on the all-important and self-evident fact that consumptive patients should reside, winter and summer, in England or abroad, where they can breathe pure air night and day—that is, in the country, in healthy villages, in the healthy outskirts of towns. Their breathing pure air is of infinitely more importance than a few degrees of temperature more or less, or a little more or less protection from this or that wind. A fact so consonant with modern physiology and pathology has only to be brought forward to be universally acknowledged, and the time is near when medical men will wonder how they could ever think of cooping up their patients in unhealthy southern towns for the sake of warmth, which they do not get. Better far that they should stay at home than purchase exemption from the cold of our climates by exposure to hygienic conditions which produce, as a matter of course, in successive generations, plague, yellow fever, and cholera.

Guided by what I saw myself, and by what Dr. More Madden and others tell us, as above, I consider I am perfectly warranted in advising the medical profession to strike Malaga out of the list of winter resorts for invalids for the present, notwithstanding its really good climate. When hotels and villas, combining the requirements of English invalids, have been built some miles out of the town, at the base of the hills, where the wealthy Malaga merchants have established their country residences, and when the state of the country renders it safe to inhabit them, then, and then only, will it be prudent for invalids to winter at Malaga.

MALAGA TO GRANADA.

We started for Granada at six o'clock in the morning, in a kind of one-bodied omnibus stage drawn by eight mules, and at once struck the mountain to the north-east at the foot of which Malaga is situated. The road wound up the south sides of the mountain for three hours, giving us a splendid view of the city, which seemed to have

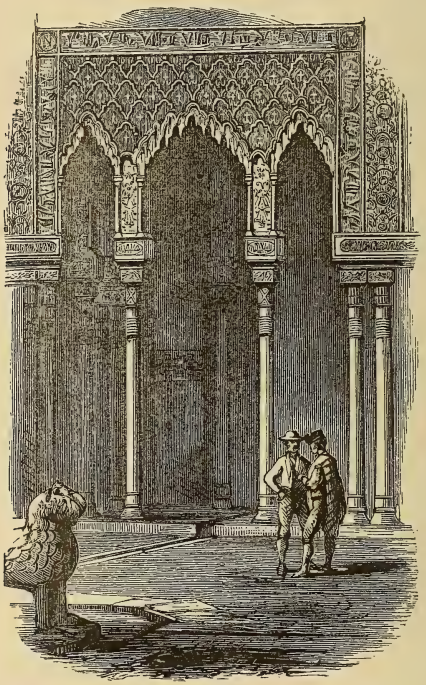
crouched itself around the large cathedral, on one side of a triangular plain, bounded by mountains and the sea.

These mountains are schistic in formation, friable, and water-worn into innumerable sugar-loaf cones, the sides of which are everywhere planted with Vines. The Vines are cut down to the stumps annually, and at the time of my visit (May 14) were just sprouting, so that the hill-sides, at a distance, seemed covered with Grass. The Vine-clad hills spoke of a rich wine country. The best raisins also come from Malaga, and are prepared from a muscatel grape which is grown on these mountain slopes. London alone receives 12,000 tons yearly. As we ascended, the Chamærops humilis, the Genista, Cytisus, and Mountain Lavender, showed themselves as usual. We left the thermometer 72° at night, 78° in the day, at Malaga, to find it three hours later, at an elevation of 3000 feet, only 58° at nine o'clock, with a cold wind. Ilex, Cork Oak, cereals, and Vines occupied the hill-sides, until we descended to limestone rocks and soil, where the Olive, Fig, Carouba, Mulberry, reappeared, with luxuriant ground crops, and near water Lombardy Poplars, White Poplars, and Willows. This is the character of the luxuriant irrigated valley around Granada, the renowned "Vega," which repeats at an elevation of about 2000 feet the fertility of the Murcian and Valencian lime valleys. There is more general verdure, however, for it really does rain in the province of Granada, so that cultivation does not depend entirely on irrigation. The entire country, from the moment the mountains which overcap and protect Malaga had been crossed, bore the evidence of winter rain. Altitude and proximity to the Atlantic clearly controlled other influences.

The mode of travelling greatly interested us. We had a postillion on one of the first mules, a coachman with long reins on a high box, and a supplementary driver, called the mayoral, sitting at his feet at times, but oftener running by the side of the mules, whipping and urging them on. The endurance of the young postillion and of this mayoral positively amazed us. The former rode all the journey, eighty miles; he was twelve hours in the saddle. The latter ran, a great part of the day, by the side of the

mules, lashing them, shouting at them at the top of his voice, and often throwing stones with which he filled his pockets. This was, no doubt, the way in which travelling was carried on all over Spain before the days of railways. We thus passed through a deal of pretty mountain scenery, Vine-clad hills, fertile Olive and Mulberry-covered valleys.

THE ALHAMBRA.



THE COURT OF LIONS.

Granada, when I saw it in the middle of May, was very lovely with spring verdure. Owing to its altitude, 2500 feet, in the midst of a mountain region, there is no lack of moisture; indeed, it rained heavily while I was there. In winter, I was told, it is often very cold, snow falls and

it freezes; whilst in the height of summer it is very hot, as are all similar elevations in Spain. Thus Granada is only fitted for a spring or autumn residence. In winter it is too cold, in summer too warm. The great attraction is the Alhambra, the palace of the Moorish caliphs in the days of old, still in wonderful preservation. This "architectural dream" deserves a week's scrutiny and study. It is an earthly realization of the Mahommedan's idea of paradise. Surrounded by flowers and houris the sensual Mahommedan could here shut out the world and fancy that he had really crossed the bridge as sharp as a razor, supported by a guardian angel, and had arrived at the paradise promised to all good Mussulmans by Mahommed.

Time was precious, so I was obliged to tear myself away from the fascinations of Granada and the Alhambra, and to pursue my pilgrimage "homewards."

GRANADA TO MADRID.

We left Granada in splendid style, in a grand diligence just like the old French three-bodied diligences of former days, drawn by a string of twelve handsome mules. We had the three attendants, the postillion, the coachman, and the mayoral, or supernumerary mule-whipper. The postillion rode all day, from four o'clock in the morning until five in the afternoon, when we reached the railway at Andujar. A Spanish travelling companion told me that before the railroad was opened to Andujar the same postillion used to ride from Granada to Madrid, two days and a night, and sometimes died at the end of the journey. The driver had clearly the best of it, for he sat still, merely holding the reins and occasionally using his long whip. The mayoral, like the postillion, had a hard time, for he was up and down every five minutes, and was as often running by the side of the mules, shouting at the top of his voice, lashing out with a long whip, or throwing stones at them, as sitting in his seat at the feet of the driver. These men afforded a good illustration of the power and endurance of human muscle and vitality in youth under efficient and constant training.

Until we struck the Guadalquivir valley, a few miles before reaching the rail, we were all day in a mountain district, between 1500 and 2500 feet above the sea. Here it clearly rains in winter, and the scenery was very picturesque and lovely. The rocks were generally secondary, cretaceous, with here and there schistic deposits from the higher primary mountains. In the lower valleys we found the Olive, Mulberry, Poplar, Willow, in the higher schistic regions, the Cork Oak, the Ilex, sometimes grand trees, with the Broom and similar shrubs. The Hawthorn was very common on the roadside, and being in flower gave quite an English look to the road.

We took the railway at six for Madrid, but I was determined not to spend a night on the road, such a course being altogether opposed to my travelling principles. I was told that there was no bearable place where I could find accommodation for the night to break the journey, but I determined to run any risk, and stopped at 10.30, at Val de Penas, a little town, the centre of a well known wine district. I and a friend, who was willing to try the adventure, were deposited at the station, half a mile from the town. I managed to make the station-master understand that we wanted beds, and he sent a porter off with us. In a few minutes we reached Val de Penas, an assemblage of one or two-storeyed, whitewashed houses, in wide, clean, regular streets at right angles to each other. We knocked at a small but respectable dwelling-house, the inmates of which had retired to rest, and after some demur were admitted, and shown into a "Moorish" quadrangular courtyard, with an arcade all round. A bustling, good-natured woman ushered us into a nice clean room, opening on this arcade, where we found two decent beds, and after the hard day's journey from Granada, we soon found oblivion in slumber.

We had not to leave Val de Penas until one o'clock, so did not rise very early. On appearing we found our lively and obliging hostess busily employed combing the long black tresses of a dark-eyed grown-up daughter, who was sitting on a chair in the courtyard. This performance concluded, with sundry amiable nods and smiles from

mother and daughter, we contrived, partly by signs, to make known our wants for breakfast, which were attended to. The repast was a very pleasant one, and partaken with a certain degree of state under the arcade, for the best crockery, evidently treasured curiosities, was brought out for the occasion. By this time we had found out that we were not in a "Posada," but guests of the blacksmith of the village. The station-master had rightly concluded that we should be better treated there than at the inns, which we subsequently saw, and which did not look very tempting. Whilst we were breakfasting our hosts sat down near us, and what with signs, smiles, gestures, and the few words of Spanish we could muster we managed to keep up an animated conversation. We were evidently even more a subject of curiosity to them than they were to us.

After breakfast we made a perambulation in the town, and were everywhere received with great cordiality and civility. The population bore stamped on their features good nature, sobriety, hard work, and health. They clearly belong to the simple-minded race to which I have alluded, to the race that has for centuries shed its blood like water to defend superstition, naively thinking it was supporting religion, and to protect a corrupt race of kings and nobles, under the impression that it was performing a sacred duty to its native country. Such a race, once educated, emancipated from the trammels of superstition and of fealty to corrupt rulers, who have forfeited every claim to respect and support, is sure, as I have said, again to raise the name of Spain to a high rank in the family of nations.

Amongst other houses that we visited was a large wine exporter's premises. The business was carried on in a spacious quadrangular courtyard of the usual character surrounded by buildings. In addition to vats containing wine, there were an immense number of pigskins, some filled with wine and doing duty for casks, others in the various stages of preparation for that purpose. The skins are very artistically pulled off the animal, so as only to leave two good sized holes, one at the neck the other at the

tail, and four small ones at the feet. The larger holes are pieced with pieces of skin; the smaller are sewn tightly, so that no escape of the wine is possible. Previously to this being done the bristles are scraped off and the skins submitted to some softening process; we saw hundreds thus preparing for use. At one o'clock we regained the train, mightily pleased with this little insight into Spanish village life, and grateful for the cordiality of our reception by all with whom we had come in contact.

MADRID.

Madrid is not like any other city that I saw in Spain. In its modern part, at least, it resembles a portion of Paris or of Bordeaux. The houses are tall, many-windowed French houses, and the streets are tolerably wide Parisian streets. The most peculiar feature about Madrid is its situation in a plain 2700 feet above the sea, ten miles from the southern base of the Guadarrama chain of mountains. The mere altitude makes it cold even in the latitude of 40° in winter, and the situation at some distance from the foot of high mountains covered with snow from autumn to spring, exposes it to dry, piercing down draughts and winds from the north. These meteorological conditions render the inhabitants liable to acute inflammatory affections of the chest, which are very common, severe, and fatal. In the summer the elevation does not preserve Madrid in this latitude from extreme heat. It is then as fiercely dry and hot as it is dry and cold in winter. When I was there, May 20, the temperature was cool and agreeable, and the weather very pleasant. This I was told is generally the case in spring and autumn.

There is much to see at and near Madrid, but as I had only a few days to dispose of, after examining the magnificent picture galleries, I turned my attention to my usual study, vegetation as illustrating climate.

It is most interesting to observe at Madrid, on an extensive scale, how elevation neutralizes latitude. Judging from the vegetation, the winter and spring must be nearly as cold as they are in England, although the summers are

much hotter. When I was there, May 18, there were but few spring flowers in the public gardens, and the planting out of Geraniums, Heliotropes, Verbenas, had but just been completed. There were Stocks, Pansies, Delphinium, Sweet William, Aquilegia, Eschscholtzia, Silene, Antirrhinum Arabis, in flower or coming into flower. The deciduous trees had just made their new leaves; there were but few conifers or evergreens. I found the names of several ornamental trees which I had seen in other parts of Spain without being able to obtain their designation. The following were growing as large trees:—Cercis siliquastrum, Ailantus glandulosa, Celtis australis, Pinus maritima, P. Halepensis, Robinia pseudo-Acacia, very commonly used all over Spain as a town tree, no doubt from its doing well with little water. The same may be said of the Sophora Japonica and of the Melia Azedarach, Celtis occidentalis, Tilia intermedia, Gleditschia triacanthos, Negundo fraxinifolium, Broussonetia papyrifera, Acer pseudo-Plantanus, Acacia Farnesiana, Prosopis siliquastrum, Platanus occidentalis, Duvaua dependens, Gymnocladus Canadensis, Robinia umbraculifera, Cedrus Libani, Populus canacens, Acer campestre, Cupressus horizontalis. The soil at Madrid is partly siliceous, the great mountains which rise to the north to a height of 5000 or 6000 feet being granitic.

The railway from Madrid to the northern frontier ascends to a height of nearly 6000 feet, into an Alpine country thickly wooded with Conifers and Oaks. The latter were then beginning (the 20th of May) to send forth their leaves. It is the north winds from these snow-covered mountains that contribute so much to embitter the climate of Madrid. On their northern slopes the mountains are, for a great distance, barren and treeless.

True to the principle not to travel at night, I stopped at Valladolid and at Burgos to break the journey, and found both these cities worth visiting. They are much less Spanish than the towns south of the Guadarrama chain. The streets are tolerably wide, whilst the houses reach three storeys, and are not all whitewashed. Altogether there is a northern character about them, explained by the elevation, which is considerable, and by the consequent

coldness of the winter temperature. In Valladolid I saw the house in which Christopher Columbus died, a memorable monument; and also the house and room in which Michael Cervantes wrote *Don Quixote*. I sat for some minutes at the very window from which he must have daily looked when composing his renowned work. At Burgos the great sight is the cathedral, a truly magnificent structure, quite worthy of twenty-four hours' delay on the part of the passing traveller.

After leaving Burgos we rapidly approached the Pyrenees and their spurs, passing through the Basque province. Here we lost sight of the peculiar features of central and eastern Spain as a rainless, treeless country with warm shores and cold high central plains. Trees, forests, pastures made their appearance, as also the outward evidence of thoughtful, skilful cultivation. It was clear that we were approaching the shores of the Atlantic, and the moist climate of the western coast of Europe. St. Sebastian was reached, then the French frontier, and a few minutes later Biarritz.

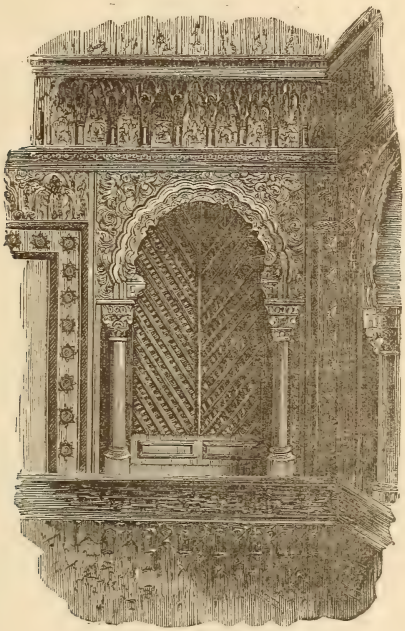
CLIMATE AND MEDICAL CONCLUSIONS.

The medical conclusions at which I have arrived, respecting the climate of Spain, have been recorded as I have progressed in the narration of my tour, so I have now merely to recapitulate.

The health regions of Spain are confined to the eastern and south-eastern coasts, at the foot of the central table-land. Owing to the south and north-westerly winds having their moisture precipitated by the mountains of the western and central regions of Spain, and owing to the north-easterly winds being pulled down to Algeria by the Desert of Sahara, the eastern coast of Spain is probably the driest region of Europe, drier even than the Genoese Riviera.

This eastern coast of Spain is also one of the mildest winter regions of Europe, although with the exception of Malaga, and its vicinity, probably not quite so mild, not quite so free from slight winter frosts, as the more protected regions of the Genoese undercliff.

Such being the case, all that I have stated in the medical chapter on the Riviera equally applies to these regions of Spain. Its climate must be equally beneficial in all cases requiring dry, mild, bracing, sunny, stimulating winter weather.



THE ALHAMBRA.

CHAPTER X.

CORFU—THE IONIAN ISLANDS—GREECE—THE ARCHIPELAGO—CONSTANTINOPLE—THE DANUBE.

"'Tis Greece, but living Greece no more!
So coldly sweet, so deadly fair,
We start, for soul is wanting there.
* * * * *
Fair clime, where every season smiles
Benignant o'er these blessed isles,
There mildly dimpling, Ocean's cheek
Reflects the tints of many a peak
Caught by the laughing tides that lave
These Edens of the eastern wave."

BYRON—*The Giaour.*

ONE of the most enjoyable modes of returning home after a winter spent in Italy is by the route described at the head of this chapter. I had long wished to take this journey, not only for pleasure, but also to study the spring vegetation and the climate of the north shore of the Mediterranean east of Italy. At last the long-contemplated plan became feasible, and in the evening of April 27th, 1872, I started from Brindisi on an Austrian Lloyd steamer for Corfu.

The weather was fine, the sea calm, and the vessel large and commodious. As soon as the lights of Brindisi began to pale on the horizon I retired, passed a very comfortable night, and next morning by six was on deck, anxious to ascertain the state of things. We had crossed the mouth of the Adriatic in the night, and were running a south-easterly course, a few miles only from the shore of Albania, at the foot of precipitous limestone mountains, apparently from 4000 to 6000 feet high. At the higher elevations there were still patches of snow glistening in the

sun, and creating rivulets that trickled down the mountain, to lose themselves in the sea.

The sun was shining brightly on the bold irregular precipitous mountains, bringing into clear relief their projections and recesses. To the eye these appeared naked, but on examination with a glass it became evident that they were covered with brushwood, probably Rosemary, Thyme, Lentiscus, Juniper, and Myrtle. When the mountains became less precipitous, the folds, depressions, ravines, were covered with patches of Conifers, principally the Pinus Halepensis or Aleppo Pine, I was subsequently informed.

Curiosity as to our whereabouts thus gratified, my eyes turned instinctively to my fellow passengers, who, like myself, had abandoned their berths and were leaning over the side of the vessel, looking landwards, entranced by the beauty of the scenery, by the glorious harmonies of the sea, the mountains, and the sky, lit up by southern sunshine. They were only seven, a Greek gentleman on his way to Athens, whose acquaintance I had made at Brindisi, and an English gentleman and family bound for Constantinople, viâ Corfu, Athens, and Smyrna.

My Greek friend had passed a day with me at the commodious Brindisi Hotel. He was partner in a large London house, and had spent nearly twenty years in the East without revisiting Europe. He had not seen his native country for a much longer period, and was in a feverish state of patriotic impatience to revisit once more Athens, where he was born, and the haunts of his youth. He had made a handsome fortune in the East, he told me, and meant to buy land, to invest capital, and to help to regenerate Greece. Indeed, he was full of day-dreams for the prosperity and glory of his beloved country. He had with him his "son," a dear little boy of five, whom he wished to introduce to the land of his forefathers. He had taken the child from his mamma's lap, promising that he and a trusty man-servant would do all required. The duties most audaciously undertaken by the father and his valet were most scrupulously performed, but the child was more than a match for the two, and was often the cause of a degree of perplexity and of bewilderment, amusing to witness.

The English gentleman was a good illustration of the educated English paterfamilias. He was a University man, a good classical scholar, an ex-M.P., and had travelled a deal in his youth. Being desirous to show his family a little of the world, he told me he had just started with his wife, son, daughter, and niece, an ample supply of Murrays' and introductions to our Ministers and Consuls, for a two months' Eastern tour. We travelled side by side until I left Constantinople, and the companionship of this family proved most agreeable, taking away all feeling of loneliness.

As we progressed the Albanian mountains became less precipitous, small plains appeared near their base, in which large Olive trees were growing, and their presence was soon followed by the appearance of a village or town—Bucintro. In all civilized parts of the world the habitations of man make their appearance simultaneously with the evidences of fertility; with the appearance of land that will produce what he lives upon, animal or vegetable. The civilization, however, of these Albanian villages, lost in the folds of their wild mountains, would appear to be at rather a low ebb, if, at least, the captain of our steamer is to be relied on. In reply to a question as to the people who inhabited them, he exclaimed, "È una razza maledetta," adding that it would be an evil hour for us were our vessel wrecked on that coast! Perhaps the Albanian villagers were belied, and were better than their reputation.

When opposite Bucintro, on turning round, we saw rising out of the sea, to the south-west, a rocky barren island about six miles in circumference, inhabited by a few fishermen only, the island of Fano. It is fifty miles from the nearest point of the Italian coast, Otranto, and twelve from the island of Corfu. The latter also appeared on the south horizon, apparently a continuation of and a projection from the Albanian mountain land. Our steamer directed its course to the angle of junction, and we soon discovered and entered a channel only two miles wide, which separates the northern extremity of Corfu from the Albanian coast. The channel soon widens and forms a lake-like expanse, exquisitely lovely, and eight miles in width, opposite the town of Corfu. This lake-like expan-

sion of the channel between the island and the mainland may be compared to fifty Loch Lomonds, surrounded by fifty Ben Lomonds. We breakfasted as comfortably as on the Scotch loch steamer, whilst passing rapidly over the blue waters, land-locked and surrounded by beautiful mountains, arriving at eleven in the harbour of Corfu.

Corfu is a crescent-shaped island, of limestone formation, latitude 39° 30′, lying all but north and south, and separated from the mainland by a channel of variable width, two miles at its northern outlet, twelve in the centre, six at the southern outlet. The width of the island, which is mountainous, varies from twenty miles in the north to three or four in the south. The town of Corfu is situated on the eastern shore, at about its centre, facing the Albanian coast and mountains. It is composed of the citadel, the town, and the suburbs. The citadel occupies the summit of a small plain, about two hundred feet above the sea. It comprises the principal fortifications, including two castles, the former English governor's palace, and a wide esplanade, now a public garden. The citadel overlooks the harbour and the town, the narrow streets of the latter occupying the sloping hill-sides between it and the sea.

The town of Corfu is singularly interesting to the northern traveller, more so than any other town I saw in Greece, not excepting Athens. The picturesque, bright-coloured Grecian and Albanian costumes are very numerous —all but universal—meeting you at every turn; and every transaction of life is carried on in the Greek language. The names of the streets, the names and the occupations of the shopkeepers, the Government judicial, and trading announcements and advertisements are all in Greek. The years passed at school and college revert to the mind, with Thucydides and Sophocles, and all the memories of that very hard-working period of life; I was enchanted, and rambled about hour after hour. I kept to my Greek friend and his boy, following them to a very good hotel overlooking the esplanade and the citadel, where we were perfectly comfortable. I found him an agreeable companion, and we drove about the island together, he with a view to investments, I intent on the study of vegetation.

Corfu, at the time I saw it, the end of April, is certainly one of the loveliest spots on the face of the earth. Anchored out at sea, from six to twelve miles distant from the mainland, it has ever before it the magnificent range of limestone mountains that skirts the Albanian coast, wooded to the sea at their base, bold, naked, jagged, precipitous in their upper elevation. The island is merely the summit of a submarine mountain range, rising and falling, furrowed by valleys, ravines, depressions, narrowing and widening, presenting every possible inequality of surface from its highest peak (1900 feet) to the sea which surrounds it.

Owing to the long occupation of the Ionian islands by the English, and to Corfu having been the centre of Government, it has been polished, civilized, up to our standard, like Malta. The influence of former days is still felt, although our protectorate has come to an end, and it has now become a part of the kingdom of Greece. The principal hotels are clean and comfortable, the roads all over the island are as good as in England, and good carriages with civil drivers are to be had without trouble. I felt it quite a luxury to drive about on good roads, in a comfortable carriage, in the midst of the familiar Mediterranean vegetation, growing with exuberant fertility, warmed by the southern sun, and generally in view of the blue sea waves; for the sea is seldom lost sight of for long together, owing to the narrowness of the island.

It is only, however, in the numerous depressions, valleys, ravines that this exuberant fertility shows itself. The heights and elevations accessible to northern winds from the continent are either naked or clothed with Pines, the Maritime and Aleppo Pines principally. This fact gives the key to the climate of Corfu. On the same line of latitude (39°) as the south of Italy, the centre of Sardinia, Majorca, Valencia, its vegetation is equally southern—equally or even more luxuriant—wherever there is protection from the continental or north winds. These winds fall upon Corfu owing to its being eight or ten miles out at sea, thus distant from the protection which the Albanian mountains give to the regions at their base.

In all such sheltered regions I found (April 28th) in the

gardens and elsewhere the vegetables, flowers, and fruits which appear at the end of June in England—Peas, Broad Beans, Strawberries, Roses of all sorts, in full flower, Banksia, Bengal, Tea, hybrid; Delphinium, Collinsia, Antirrhinum, Carnation, Pink. The Acacia and Horse Chestnut trees were going out of blossom, as were all spring flowers. The Mulberry and deciduous Oaks were in full leaf. The Ailantus glandulosa, which is extensively grown, had only just begun to form its terminal branches and leaves. The Orange trees were in blossom, and some had still on them large, well-formed fruit. They were healthy and large, but only found in the deepest valleys, in the most sheltered localities; I saw but few Lemon trees. One day I drove over to a village called Benitza, seven miles from Corfu, through a most smiling and picturesque country, through villages full of gaily-dressed, apparently well-to-do peasants. It was Sunday, and they were all in the streets in their holiday costume—a very pretty sight. In these southern villages on fête days the people spend the day together out of doors, at the entrance of their houses, in the squares, in the streets, round the fountains. The girls shyly assemble and herd in bevies or flocks, whilst the young men on their side do the same, both eyeing each other at a distance.

Benitza contains, I was told, the largest Orange grove in the island. The village and the Orange orchard, which latter only occupies a few acres, are situated in a smiling valley, sheltered on every side except on the south-east, where it reaches the sea. Even here a thick screen of Cypress trees had been planted, in order to form a protection against the south-east wind. Notwithstanding the shelter they afforded, the Orange trees nearest to the sea were not healthy, many of their terminal branches being leafless and dead.

Thus the vegetation of Corfu indicates a climate and soil similar in their main features to that of the coast line of the western Riviera in its more sheltered regions. But this similarity only exists in the protected depressions and valleys where there is clearly immunity from severe winter frosts, with intense and continued summer heat, and

enough rain to secure fertility. This is indicated by the great size and healthiness of the Olive and Orange trees, and by the existence of some good-sized healthy Lemon trees in the open air. The latter, however, are so few in number, and so limited to thoroughly sheltered localities, that it is evident the winter frosts are more severe generally than on the Riviera between Nice and San Remo, where, as we have seen, they are found in groves or orchards, covering the lower sides of the mountains facing the sea, and fully exposed to sea south winds. On the other hand, the higher regions of Corfu, exposed to the continental winds, are too far from the shelter of the Albanian mountains to be thoroughly protected thereby, and consequently present the vegetation found about 2000 feet above the sea level on the Genoese Riviera, namely, the Maritime and Aleppo Pine, and the usual Mediterranean brushwood of lime regions, Rosemary, Thyme, Myrtle, Lentiscus, Cystus, Juniper, Globularia, Euphorbia.

Corfu having been so long under the protectorate of the English, its climate, and especially its winter climate, has been the subject of much study. Dr. Scoresby Jackson, in his medical climatology, from an analysis of the various authorities, gives 65° as the annual mean temperature, that of Mentone being 60° 80′, and the winter mean, Corfu, as 53°, Mentone being 49°. These means, however, are clearly too high, being founded on observations made in rooms and verandahs, and show how little reliance can be placed on mere thermometrical data, loosely taken, apart from the observation of nature.

Snow appears on the Albanian mountains opposite Corfu by the end of November, and remains until the beginning of May. Occasionally the summits of St. Salvador, in Corfu (1900 feet), are thinly covered with snow for several days at a time. North continental winds coming from the snow-covered mountains of Albania in winter are dry and cold, whilst in summer they are dry and hot, the mountains being then heated, baked by the sun. Winds from the south coming from the sea are always moist; moist and mild in winter, moist and hot in summer.

It is stated by Dr. Davy that the more frequent winds

at Corfu in winter are those from the E., E.S.E., and S.E., whilst the summer winds are N., N.N.E., N.E., and E.N.E. This statement requires explanation. In winter, the systemic winds on the north shore of the Mediterranean are the north winds. It is they that produce winter; with south systemic winds blowing day and night there would be no winter, not even in December, January, and February. If south winds are observed to predominate at that epoch, anywhere on the north shore of the Mediterranean, there must be some deception, some error of observation, and that error I discovered at Mentone. The sea breeze or slight monsoon produced during the day in brilliant sunny weather, by the heating of the coast line, is mistaken for a south wind. So it must have been at Corfu. The air, rarefied by the heating of the lower regions of the limestone mountains that line the Albanian coast, rises into the upper atmospheric regions, and the sea air rushes in to fill the place. This wind from the sea is often nothing else but a northerly wind that has gone out to sea overhead, from the top of the high mountains, and is then pulled back, apparently as a south-east or south-west wind.

The existence of northerly winds in summer is easily explained. Cooler, heavier air from the mountains of the continent, rushes into the Mediterranean basin at the coast line, and near it, to fill the vacuum caused by the heating rarefaction, and rising into space of its atmosphere. Corfu lying some miles out at sea is within the influence of both phenomena. It feels the sea breeze making for land in winter as a local south wind, and it also feels in summer the winds which have come from the summit of the north mountains some ten miles distant.

According to Dr. Davy, the rainfall is both more abundant and more continuous at Corfu than on the western Riviera, a fact which is at once explained by its insular position and by its distance from the coast. From a table constructed by Dr. Davy, on an average of three years (1823–25), the number of rainy days in the year are 103; the average in each month as follows:—January, 11·6; February, 11·3; March, 13; April, 13·6; May, 4; June, 5; July, 3·3; August, 0·6; September, 6·6; October,

10·3; November, 10·6; December, 13·3; total, 103·2. The remarkable feature in this table is not the amount of rain at the autumnal and vernal equinoxes, but its persistence throughout the winter months, December, January, and February. The explanation appears to me, that Corfu, being some miles out at sea, is more in the battle-field of the north and south winds than the Riviera coast line, and probably than the Albanian coast line. Very often in winter at Mentone, as I have elsewhere stated, dark clouds bank up on the horizon about ten miles from land, and it rains, evidently in torrents, although we at the foot of the mountains are in sunshine. The cause is a collision between cold northerly winds from the land mountains, and warm moist air out at sea. It has often occurred to me that an island ten miles out at sea on the Riviera coast would have many more rainy days in winter than we have, and Corfu appears to realize this fact. Although so near the north shore of the Mediterranean, the fact of its being out at sea no doubt modifies the climate. When looking at the beautiful Albanian mountains from Corfu, it struck me that the real sheltered health climate would be on that coast. On inquiry, I found that I was right in my conjectures, and that Orange and Lemon trees grow much more luxuriantly at the foot of the Albanian mountains than in any of the Ionian islands.

What with the cold snow winds from the Albanian mountains, with the moisture of the southern winds, and with the frequent rainfall from collisions between the two, it seems that Corfu, lovely as it is, is not a desirable winter residence for consumptive and bronchial invalids. Such, at least, seems to be the opinion of those who have studied and described the climate from actual experience. To those, however, who without being absolutely ill, merely want to avoid the northern cold, and to find relaxation, in yachting, boating, fishing, shooting, driving, riding, walking, bathing, in glorious scenery and in a mild climate, with English comforts, a winter at Corfu would no doubt be very agreeable. To the spring tourist, more especially, Corfu and the Ionian islands open out a glorious source of quiet enjoyment in April and May. Formerly it was very difficult to

get to Corfu, and the traveller had to pass several days and nights at sea. Now a day's easy journey from Rome by rail, or two from Turin or Milan, bring him to Brindisi, and one quiet night in a good steamer completes the journey to Corfu. I shall best convey my appreciation of the beauty of Corfu, by adding that it is one of the few spots on the Mediterranean to which I should be glad to return any April and May, merely for the enjoyment of "physical existence." After May the weather becomes too hot to be agreeable. Moreover, malaricus fevers appear, as in all the islands of the Mediterranean.

THE VOYAGE FROM CORFU TO ATHENS.

On the evening of the 30th of April we left Corfu for Athens by a small Greek steamer, which performs the voyage once a week in forty-eight hours, touching at several islands on the way, Paxo, Cephalonia, and Zante, and alighting at Patras and Corinth. This is the only steamer that takes this route, establishing a weekly communication between the islands, and keeping near the coast, and in partial shelter all the way. It entails transshipment at the isthmus of Corinth, and to avoid this all other steamers go round the Morea or Peloponnesus, to accomplish which they have to pass out to sea. As in our eyes the transshipment was a positive advantage, for it gave us seven miles of *terra firma* travelling, we did not hesitate to confide ourselves to the Greeks. On taking our places we were much pleased to receive a quarto printed page of instructions in modern Greek, so very like the old that it was quite easy to make it out with a little assistance from local friends.

The evening was calm and beautiful, and we once more enjoyed gliding smoothly along under the lee of the grand Albanian mountains, for steaming in the Mediterranean in calm weather is altogether enjoyable. Night gradually came on, the lights of sundry lighthouses appeared, and we soon passed the most southern point of Corfu. At ten we reached Paxo, an island about fifteen miles distant, and here we stopped to take in passengers

and to land cargo, with great commotion, Babel of tongue, and apparent confusion; all very picturesque and interesting. Once more off, we retired for the night.

We had a stretch of open sea of about a hundred miles to make before reaching the channel that separates Cephalonia from Zante, the most trying part of the voyage. That passed, a kind of internal sea is reached, sheltered by these two islands, by the Morea and by the mainland. During the night a strong wind from the north-west rose, and we got a good tossing, but the Greek vessel, although not very large and not very clean, proved a good sea boat, and we reached the comparatively quiet waters of the sea of Zante by noon, the following day, stopping an hour at Cephalonia, and the same at Zante. These stoppages were welcome, for, although in an all but land-locked sea, there was a deal more motion than was pleasant. Indeed, we learnt afterwards at Athens, that a perfect hurricane was blowing outside that same day, much to the misery of the passengers of a large Austrian Lloyd steamer that left at the same time that we did.

All this day we were skirting the islands of Cephalonia and Zante, generally near enough to the land to be able to scrutinize it with or without a glass. The general features of the islands appeared everywhere the same, calcareous rocks and mountainous elevations, apparently naked, but in reality covered with scanty brushwood, with here and there patches of Conifers, or groves of Olive trees, according to elevation, protection from the north, and nature of surface. At each island at which we stopped boats came out to the steamer with baskets of oranges and of flowers: Roses, Banksias, Teas, hybrid; Carnations, Stocks, Iris, Delphinium, bespeaking summer and fertility in hidden valleys, ravines, nooks, corners sheltered from the wind; for nothing of the kind was to be seen from the sea, only the occasional patches of Conifers and Olive trees in the plains, with naked rocks and mountains everywhere. It appeared as if, wherever the north winds touch, they actually peel the rocks of all tree vegetation. These islands appeared to reproduce Corfu, but with less fertility and more rocky barrenness. Opuntias and Aloes were seen near

every village or town. According to M. Orphanides of Athens, the Aloe vulgare is found wild in Greece, and is mentioned by Dioscorides.

That evening we landed at Patras, at the entrance of the Gulf of Lepanto, which presents a background of magnificent snow-covered mountains, and remained there two hours, much to our satisfaction. It is a miserable little town of small houses and shops along the shore, and on each side of a long street at right angles to the latter. Considering that Patras is the centre of the lucrative "currant" trade, I was surprised to find no greater evidences of prosperity. The night was passed in sleep steaming quietly up the Gulf of Lepanto, tranquil as a river, although the wind was howling in the mountains that skirt the gulf. At daylight we arrived at the Isthmus of Corinth. The town of Corinth is now merely represented by a few wretched houses, but we were shown the site of the celebrated city of Grecian history. Here the passengers left the friendly ship and crossed the isthmus in less than an hour, seven miles. There is scarcely any rise, and a ship canal could be easily made, and I should say without great expense. The soil is schistic and covered with a brushwood of Lentiscus, Juniper, dwarf Ilex, Asphodel, and Ferula. The country was clearly in the possession of brigands, for we had an escort of mounted soldiers before and behind the carriages, and there were guardhouses and picquets at every mile along the road, with scouts between. It gave us quite an elevated idea of our own importance, to be thus escorted and protected, and we appreciated the fact that we really had arrived in the country so pleasantly and amusingly described by M. About in his *Roi des Montagnes*. The isthmus crossed, we embarked on a smaller steamer, and by midday, after passing Salamis, arrived at the Piræus.

It is worthy of remark that during the last twenty-four hours of our voyage, a bitter cold north-west wind—a regular mistral as we should call it on the Riviera—had been blowing, which obliged us to use all our wraps. This cold wind revealed the weak point of the climate of these islands, and, as I afterwards learnt of Athens and of Greece

generally: viz., cold winds from the northern regions during the first four months of the year, that is, from Christmas to May. At Patras there were still large patches of snow on the mountains immediately behind the towns with a north-west aspect, apparently at an elevation of about 4000 feet.

ATHENS.

The Piræus, where we landed, the port of ancient and modern Athens, is a safe harbour, protected by the island of Salamis, the Morea, and by the configuration of the coast. Such ports attract mariners and commerce in all ages. Instead of the great commercial and naval emporium of former days, there is now merely a suburb of small one and two storied houses: wine shops, marine stores, and lodging-houses. It is connected with Athens, five miles distant, by a railway with a single line.

Athens, lat. 38° 48′, was forty years ago a mere Turkish-built village or small town, of low one-storied houses in narrow streets, the remains of which can be still seen near the railway station. In 1834 it was proclaimed the capital of the modern kingdom of Greece, and a new town has been built north of the old one, between it and the base of the Acropolis rock, on which is situated the Parthenon. This new town may be compared to a small English or French country town, with small two-storied modern houses and a high street in the centre, ascending a hill, at the summit of which is a good-sized square. The basement is occupied by the king's palace, a factory-looking parallelogramic building surrounded by gardens. On the sides of this square several streets abut, at the angles of which are some good houses. Several of them are occupied by very comfortable hotels. In the side streets of modern Athens there are some good buildings, amongst others the University and the Post Office. On the whole, there is an appearance of life and of modern provincial prosperity about Athens, but little or nothing to remind the traveller of the celebrated Greek city of former days, except the ruins. These ruins, situated at the outskirts of the town, are not numerous. The Parthenon, or Temple of the Virgin God-

dess Minerva, the Erectheum, built of the hard white marble of Pentelicus, the Propylæa, are on the Acropolis rock, the site of the old Cecropian fortress, which overlooks and crowns the city. They are probably the most chaste and beautiful ruins extant, and well worthy of a special visit all the way to Athens. There is also the temple of Theseus in wonderfully good repair, considering that it was built 470 B.C. There are still a few grand columns remaining of the Temple of Jupiter, the portico of Hadrian, and but little else worthy of notice except from antiquarian associations.

The plain in which Athens is situated is six miles wide, and is formed by two parallel mountain-ridges about 2000 feet high, which descend east and west to the sea of Salamis. The town lies at the foot of the Acropolis rock, itself a spur at the base of the eastern ridge. In the centre of the valley is a grove or wood of Olive trees, with vines planted between them, irrigated by small streams. Small as are these Athenian streams, they bear very celebrated names, for they are no other than the Ilissus on the east side of the town, and the Cephisus on the west. It was in the shade of these very olive groves that Plato, Aristotle, Socrates, and the other sages and orators of ancient Greece walked and taught their pupils; so it is very sacred ground. The rest of the Attica plain, beyond the olive groves, is cultivated with grain of different kinds, or left fallow. The soil seems very poor and exhausted from want of manure and proper treatment.

After devoting the first morning to the world-renowned ruins, I directed my steps in the afternoon to the Botanical Garden, in the plain. Here I made the acquaintance of the director, M. Orphanides, Professor of Botany in the university, one of the most learned botanists in Europe, who kindly showed me his establishment. A part only is devoted to botanical purposes, and appears merely intended to illustrate the natural families for the instruction of the pupils of the university. The greater part of the garden is a nursery for the propagation of fruit and other trees, such as Mulberry trees, calculated, by their dissemination throughout the country, to favour its social and commercial

prosperity; they are sold at 10 centimes (a penny) each, to all who apply. The garden was the scene of luxuriant vegetation, but then the soil was good and deep, that of the centre of the plain, there was plenty of water, and lastly, and principally, it was surrounded by a wall 20 feet high to the north, 10 feet on the other sides. The Orange and Lemon trees were nearly all planted on the south side of the north wall, protected by which, they grew and flourished, but not by any means as at Corfu. There were screens of trees and of evergreens also, in many places, to break the wind. The pyramidal Cypress is much used all over Southern Europe for this purpose. The other plants principally employed as screens were Schinus Mulli, Aleppo Pine, Euonymus japonica, Carouba, Ilex, Ailantus glandulosa. Roses were in full flower, Chromatella shining above all others as a climber. This it does all over the South of Europe; in Algeria I have seen one plant fill a tree. Our nurserymen do not seem to know it as one of the most luxuriant Tea climbers, beating even the Gloire de Dijon. All the hybrid Roses were in full flower, as also Delphinium, Poppy, Linum rubrum, much grown in the South, Collinsia, Aquilegia, Sweet Pea, Pittosporum, quite a tree, Oleander, the same, not yet in flower, Campanula.

Behind the King's palace there is a garden of many acres, at the circumference of which is a deep thicket of evergreen trees, as a screen or protection, with the flowers and Aurantiæ all grouped in the centre. The trees and flowers were the same as those in the Botanic Gardens. Jasminum revolutum was in great luxuriance, forming large bushes. Flowers in this region seem to be treated like vegetables in a good Scotch kitchen garden in the bleak North, which is generally surrounded by a high wall. Given such protection, they thrive everywhere in this latitude, and appear from six to eight weeks sooner than they would in our own southern or midland counties.

The roads about Athens are planted with avenues of Schinus Mulli, Populus alba, Ailantus glandulosa, Acacia, Ilex, and Carouba. The latter does not seem to thrive as a road tree, as I found also the case at Algiers, but the former flourish and become large trees in the driest and most

exposed situations. This remark applies specially to the Populus alba and to the Ailantus, which glory in the climate, with its dry summer. The Ailantus is beginning, I was told, to be extensively cultivated for its wood.

The Orange trees were healthy, but rather small, whenever seen, and their height was strictly limited by that of the protecting wall or tree belts. In front of the king's palace they were mostly planted in a deep depression or pit, clearly to shelter them from the wind. Professor Orphanides showed me in his private garden a most interesting collection of more than two hundred different species of Aurantiæ, all small, but well-grown, in full life and vigour. He told me there were three hundred recognised species in existence. I must add that I do not remember seeing a Palm; Aloes are common.

The above botanical facts prove that Athens and its vicinity, although situated nearly five degrees more to the South than the Western Riviera, do not enjoy the same amount of protection from north winds and are colder in winter, although the general character of the winter climate is the same. That it should be so is easily understood on looking at the map. Behind, direct north, Attica is protected by Mount Parnes and Mount Cithæron, and also by the mountains of Roumelia; but to the north-east the mountainous peninsula, formed by Albania, Roumelia, and the Morea, is exposed to cold north-east winds from the Black Sea, and to the west to cold north-west winds from the Adriatic. Moreover Athens is situated at some distance from the more immediately protecting mountains at its back.

These facts recognised and acknowledged, we find in the climate of Attica all the climate characteristics of the north shore of the Mediterranean: cold north winds, softened however by the Black and Ægean seas, by the Adriatic and Ionian seas, a pure blue sky and ardent sunshine in winter, and intense heat in summer. Such a climate, although a healthy and bracing one, cannot be recommended to invalids, and especially to chest invalids, as a winter residence. It cannot be considered a favourable specimen of the bracing, invigorating climates of the more sheltered

regions of the Mediterranean, although pertaining to the same class. The protection from the north is insufficient.

I intended to have visited the many scenes of interest in Attica within easy reach of Athens, but the disturbed state of the country prevented my so doing. The brigands were considered to be dangerous, even within a mile or two of the town, and a Government notice, which hung up in the hall of the Hotel, was not calculated to inspire confidence. Herein it was stated that all strangers wishing to visit the vicinity of Athens were begged to apply to the proper authorities for an escort, and on no account to venture alone. Having no great confidence in the valour of the escort, and not wishing to share the fate of our unfortunate countrymen murdered at Marathon, I preferred staying within the range of safety. One morning there was a great commotion at the king's palace, and on inquiring the motive thereof we were told that the king, queen, and children had "most imprudently," without saying a word to anyone, driven off alone to picnic in some shady place in the vicinity, and that fears were entertained respecting them! A company of mounted soldiers were sent off in frantic haste after them, and the king and his family were brought back in safety and in triumph. Had the brigands got hold of them it would certainly have been a good haul. Such a state of things, however, is very disgraceful.

My travelling friend, the Greek gentleman, who had accompanied me from Brindisi, was at the same hotel, and I saw him daily. But he had lost all his buoyancy of spirits; day by day his countenance became more depressed, and before we parted he confided to me that his long-cherished plans and dreams had vanished. He found his beloved country too disorganized for it to be possible for him to return to it, and to make the settlement he wished to make. What was the use of buying real property, of investing hard-earned gains in land, when it was dangerous even to visit one's estates, when the entire country was, as it were, in the hands of the brigands. His father had been murdered when he was a child, forty years ago, in a house which he showed me, inside the town, in

the dead of the night. He did not wish to expose himself and his family to the same fate; forty years had elapsed, and the brigands were still there.

I had repeated conversations with other well-informed Athenian gentlemen on the disturbed political state of their country, and their explanation of its causes appeared to me reasonable and satisfactory.

The allied Governments, in founding the modern kingdom of Greece, made a most egregious and fatal mistake. They gave to the Greeks a constitutional monarchy, with a Chamber elected by universal suffrage, the members of which had no property qualification, and were paid. Thus to be a member of the Chamber became a business, a career, and the ambition of briefless young barristers and of fortuneless men of good family. These candidates for the Chamber, having nothing whatever to do, could go into the provinces and devote months to gaining the goodwill of the electors. Once elected, their principal object was not so much the good of their country as to make a permanent position, a living for themselves. Thence a general scramble for places, a constant formation of coalitions to upset those in office, and a change of Ministry and of all dependents every two or three months, or even oftener. There was no remedy, my informants told me, but an alteration of the constitution, which was difficult to secure, for it would have to be effected by the existing Chamber itself. That is, its members would have to sign their own death-warrants, and history, ancient and recent, tells us that it is very hard to induce effete Parliaments and Chambers to dissolve or reform themselves.

Again, instead of putting as king, at the head of a turbulent community, on which such a dangerous experiment as constitutional monarchy with universal suffrage was about to be tried, a stern middle-aged experienced man, two amiable but colourless youths have been chosen in succession. The modern Greeks require a king stern enough to shoot down the brigands like vermin, with a drumhead court martial, not amiable young men so thoroughly constitutional as to leave the country to take care of itself, and to accept a new Ministry every six or ten weeks.

During my stay at Athens there was a grand ceremony at the modern Cathedral, a very handsome edifice, at which the king, the queen, and, I presume, most of the dignitaries of the State were present. I was perfectly amazed and dazzled by the number of general officers, colonels, captains and admirals, and other dignitaries, who were present in gorgeous uniforms. It really might have been Westminster Abbey or Notre Dame. On asking a Greek friend where was the army, where was the fleet for all these hundreds of officers of high rank, he confessed to me that they did not exist, but he added that these high grades in the army and navy constituted the only means of rewarding men who had deserved well of their country in the war of independence, and even in later years.

Such is, apparently, the key to the present unsettled state of Greece. A constitutional monarchy with advanced republican institutions, for which the country is utterly unprepared and unfit; an amiable and gentle, but weak and irresolute, king, who has not strength enough of will or of character to even endeavour to stem the torrent around him; a host of civil, military, and naval placemen, poor as Job, and scrambling for the little revenue of the country, all intent upon getting into office themselves and keeping others out. The state of Greece will probably continue as unsettled as it now is until this system of government is changed, until these errors are remedied; but who is to change the entire political and social organization of the kingdom? In the meanwhile brigands occupy the country up to the gates of the capital. Agriculture and commerce are necessarily at a standstill, and the most patriotic capitalists avoid the country.

I made several pleasant acquaintances, and passed the greater part of a week very agreeably. There is a halo of antiquity about Athens which throws an indescribable interest over it at all times. The Athenians proper dress pretty much like the inhabitants of Western Europe, but in the streets are constantly to be seen Greeks from the islands or the mountains in their picturesque national costumes, familiar to us from the pictures and engravings of the war of independence.

THE GRECIAN ARCHIPELAGO.

On the 7th of August, 1872, I left the Piræus on an Austrian Lloyd steamer for Constantinople, *viâ* Smyrna. This route enables the traveller to get a glimpse of several of the most important islands of the Grecian Archipelago, as well as of Asia Minor. The vessels of the Austrian Lloyd seem to be the acknowledged and accepted media of communication in the Eastern Mediterranean. They are generally good, well kept, and well-officered boats. The north-west wind which had reigned during our stay at Athens, tempering agreeably the ardour of the sun's rays, had abated, and we once more found ourselves gliding pleasantly over a calm sea. We had embarked late in the evening, enjoyed a good night's rest, and next morning found ourselves in the midst of the islands which form the Grecian Archipelago.

The term Archipelago has been more especially given, from time immemorial, to the islands which occupy the eastern section of the Mediterranean, between Roumelia in the north and Candia in the south, between Greece in the west and Asia Minor in the east. In former days, as now, they were divided into two groups: the Cyclades near Europe, and the Sporades near Asia Minor. These islands are very numerous; some are of good size, but the great majority are very small. The smaller islands are generally mere rocks rising out of the sea, apparently barren, but in reality covered with Mediterranean brushwood. Some are of volcanic origin, but the greater number are calcareous, and are often composed of a beautiful white marble, as, for instance, Paros, whence the Parian marble was and is obtained. The larger islands, in which there is protection from wind, are tolerably fertile. They are nearly all thinly inhabited, principally by sailors and fishermen, owing, no doubt, to their rocky character and to the small amount of cultivable soil they contain in the valleys. They look very picturesque from the sea, rising out of its depths as huge rocks, or as jagged irregular mountainous islands, with bold coasts, deep inlets, and precipitous promontories,

the elevation varying from 1000 or 1500 to 2000 feet or more.

When I reached the deck we were running along the coast of Thermia, which fully realized the above general description, for it seemed a rocky, mountainous island, apparently barren. We then passed between Thermia and Zea, south of a third island well named Jura, for it soars, Jura-like, above the sea, and came to at midday in the harbour of Syra. Here we remained until six P.M., which gave us time to land and look about us, a great excitement and joy to the passengers.

Syra is a small island, crescent shaped, about four miles wide and two in depth. It is a mere rock, some 600 feet high at the highest point. The opening of the crescent is turned north-west, but it is sheltered in that direction from wind and wave by the islands of Thermia, Zea, and Jura, previously passed. It has been chosen as the centre of the steam navigation of the Eastern Mediterranean, and a good-sized town has consequently grown up. It is at Syra that the different lines of steamers meet and exchange passengers for Greece, Turkey, Asia Minor, Palestine, Candia, and other localities in this region. In this sense Syra may be compared to St. Thomas in the West Indies.

I at once took a boat, and finding no botanical companion amongst my fellow-travellers landed alone, and spent the day rambling on the hills and small valleys round the town. These hills were very bare, the ground vegetation even being scanty, but in the most barren sun-burnt spots I found growing freely a small Silene, I believe the Silene cretica, and its presence in such spots illustrates and explains the freedom of its growth in the most sun-burnt and arid gardens at Mentone. In that part of the Riviera generally, the Silene is becoming one of the commonest spring flowers, and is indeed escaping from the gardens to the open country, where it will soon, no doubt, naturalize itself. With me at Mentone it covers the borders where sown, and resows itself spontaneously. The most prominent other flowers were the variegated Thistle of the Mediterranean, a small Taraxacum, and a Convolvulus. There were very few trees to be seen, and those all

but exclusively in folds of the hill-side, at a low elevation, where there was shelter from the wind, and a little vegetable soil. I discovered a market and fruit garden in one of these folds, about a mile east of the town, which I examined with great interest, illustrating as it did the difficulty of contending with north-east or north-west winds, even in latitude 37° 18′, in the middle of the Grecian Archipelago, under a burning sun. Syra is more than half a degree further south than Athens, and at this date (May 8) the sun-heat was intense, although the air was cool and pleasant. The garden, which extended over an area of about eight acres, occupied the bottom of a wave or fold of the hill, near the sea, and was surrounded by a wall ten feet high. Moreover, on the side towards the sea, there was a row of Cypress trees, and further on a quadruple row of Cannas, about fifteen feet high. Behind this shelter vegetables were growing luxuriantly—Artichokes, Melons, Tomatos—the latter freshly planted out apparently. Broad Beans and Peas were being gathered. There were also Fig trees and Pomegranates in flower, and in the most sheltered corner Orange bushes, some eight or ten feet high, healthy, and bearing both ripe fruit and flowers.

I find that where wind is feared, in Greece and in the Grecian Archipelago, two plans are adopted to keep Orange trees low—as low as the walls that protect them: either they are planted very closely together—so much so as evidently to impede luxuriant growth—or they are cultivated as bushes, with many stems instead of one. In Spain we have seen that this latter plan is all but invariably followed—so that the Orange tree presents a different character to that under which it is observed on the Genoese Riviera and in Southern Italy. There were a few of the usual early summer flowers dotted here and there—Bengal Roses, Antirrhinums, Delphiniums. Some Pear trees had fruit the size of a Filbert.

In the town of Syra itself there were some plants, trees, and flowers in the courtyards of the houses, wherever they were completely screened from the wind, healthy, but not large—probably from want of soil—Almond, Ailantus, Olive, Vine, Pomegranate, Acacia, a Date Palm or two, a

Virginian Creeper, Carnations, and Pelargoniums in pots. All over the south of Europe I have found a miserable, pale-hued Pelargonium cultivated in pots with great care and affection as something rare and precious. Our glorious varieties have not reached the south as yet.

The sunshine and summer heat at Syra are evidently powerful enough to produce any vegetable form belonging to subtropical regions, but protection from northern winds is clearly necessary, even in latitude 37° 18′, many degrees south of the Genoese Riviera.

Syra or Syros (Σύρα or Σύρος) was well known to the ancients, and is described by Homer and other Greek poets as having two towns, and as being rich in pastures, wine, fruit, and corn. Many valuable relics of antiquity have been discovered in modern times. Its central position and its good port no doubt made it an important place then as now.

The modern town creeps up the side of the hill from the harbour. The latter, safe and deep, contained many large steamers, French Messageries, Austrian Lloyd, Turkish, going to and from Marseilles, Trieste, Athens, Smyrna, Constantinople, Candia, and many schooners and small vessels, laden with oranges, lemons, wine, and oil, moored close in shore. The houses along the port were principally wine shops, eating houses, marine stores, and cafés, filled with a picturesque population of sunburnt sailors and islanders. Most of them were dressed in their national costume—short jackets and waistcoats, with a red sash round the waist, and breeches or trousers very full, and descending below the knee, the leg being bare, and the feet encased in sandals. On their heads they wear a red cap, and the hair is allowed to grow long and made to lie on the back; they wear moustachios, but no beard. The dress of the women is less peculiar, consisting in a long jacket trimmed with braid or fur, petticoats, and a red cap. The men, bronzed by the Eastern sun wherever the skin was exposed—neck, face, legs—were muscular, hardy, and good-looking; whilst the women were decidedly handsome, recalling to mind the old Grecian statuary type. This description applies to the inhabitants of all the islands composing the Archipelago.

I wandered about the port with great interest, gazing into the deep, transparent blue waters, which seemed to support the keels of the boats and vessels without effort, as if they were swimming in air instead of in water, watching the lazy loading and unloading of the vessels, according to Eastern ways, in the midst of a Babel of voices. I looked into the cafés and stores, and stood longingly before the cooks' shops, where fish was being fried, hesitating whether I should or not have a Syrote dinner of fried fish, white bread, and "vin du pays" with the Greek sailors. This at last I did, and enjoyed the repast.

By six all the passengers had returned on board, the anchor was weighed, and we again started on our pilgrimage. Within fifty yards of us was a large Candia steamer, also on the eve of departure, and an exchange of amicable salutations took place between the passengers of the two ships. I was told that it would reach Candia the next morning, and much regretted I had not time to make a diversion in that direction. It was provoking to be so near, merely separated by a night's cruise, and yet to have to pass on. Candia is a magnificent island, with mountains six or seven thousand feet high, in which a Christian population defied, until quite recently, all the power of the Turks. Within the last few years, after a heroic rebellion and resistance, prolonged with desperation and without any assistance beyond what their Greek countrymen of the mainland could give, they succumbed. Christian Europe looked on with apathy—with apparent indifference—and saw the Christian Candiotes slaughtered without lifting up her hand to stay the massacre and devastation; and now they really are subdued and enslaved by the Mussulman. How different from the days of the Crusaders!—how lukewarm Christian Europe has become!

The weather was so beautiful, the sea so calm, that we could surrender ourselves without reserve to the enjoyment of the scene. Our destination was the Island of Scio, on the coast of Asia Minor, but all that evening we were still in the Ægean Sea, among the Cyclades, skirting their precipitous shores, gazing on their rocky heights, dreaming of the lovely Orange, Lemon, Pomegranate and Olive groves

concealed in their recesses. These scenes of fertility and beauty existed, but hidden from our gaze, which only rested on wind and storm-beaten shores, rocks, and mountains.

As we turned the northern promontory of Syra, we had in full view the mountainous islands of Andros, Tino, and Myconi, all celebrated in former days for wine, fruit, oil, and lovely women. These islands run from north-west to south-east, are long and narrow, precipitous, barren, and even forbidding on their north-west coasts, tolerably fertile on the north-east, and fairly peopled. Myconi, the most southern of the three, is also the most rocky and barren, whence in classical times the saying, "a Myconian guest." The inhabitants of Myconi were reported so poor that they were apt to appear in the light of parasites, and to come to their friend or patron's table uninvited.

We were passing between Tino and Myconi as the shadows of evening were closing over us, and I do not recollect ever having witnessed a more lovely scene. Our screw steamer, like a thing of life, was gliding swiftly over the blue waters of the Mediterranean, leaving a phosphorescent furrow behind it in the "harvestless sea" (Homer). The setting sun in the west still illumined the horizon, casting streaks of rosy light on the waters, and burnishing the rocks and mountains around us, endowing them with southern beauty. I was vividly reminded of a similar evening spent at sea on the west coast of Scotland, amongst the Western Isles, between Oban and Skye. The past and the present scene were all but equally lovely, and yet how different the Ossianic beauty of the green waters and heather-clad hills and mountains of the Western Isles and the blue waters and sunburnt rocks of the Grecian Archipelago!

These were the last of the Cyclades we saw. Between them and the Sporades on the coast of Asia Minor, there is an open sea. I remained on deck until they were out of sight, and then retired with regret, repeating the words—

> "Morn, alas, will not restore us,
> Yonder dim and distant isle."

I had become enamoured with their wild sunburnt beauty, and regretted I had not some weeks to devote to them. It would be a charming excursion in spring and early summer, with a good steam yacht, and pleasant, intellectual companions, to wander from one island to the other, nestling in pretty coves and bays like that of Syra, exploring the fertile orange-clad valleys and recesses, bathing in the pellucid, transparent sea, fishing, dozing, and dreaming. How seldom it is, however, in life that we can indulge in such day-dreams! It is nearly always the same; we are obliged inexorably to continue our pilgrimage.

Another peaceful night brought us to the shores of another lovely island, Chios, or Scio, as the Italians call it. We were awakened by the engines stopping, and on reaching the deck found we were opposite a good-sized town, that of Chios, at the foot of a gentle sloping mountain, Pelinæus by name, on the western coast of the island. Here we remained for two hours, unloading and taking in cargo and passengers.

The island of Chios is thirty miles long by ten wide, and lies due north and south. A ridge of mountains, apparently about 3000 feet high, runs from N.E. to S.W., and at their base are lower hills abutting on them. The aspect therefore is S.E., the same as that of Mentone, and I saw reproduced before me the familiar features of my winter abode on the Genoese Riviera. Calcareous mountains, apparently white and naked in their upper two-thirds, although in reality sparsely clothed with aromatic plants—Lentiscus, Thyme, Rosemary, Myrtle, Fennel—whilst the lower third and the more level ground near the shore is occupied by forests of Olive trees, with, no doubt, groves of Orange and Lemon trees in the more sheltered nooks and folds. Their presence was rendered clear by the abundant supply of Oranges and Lemons brought by the native boatmen who surrounded the steamer. These boatmen also brought quantities of a substance used in medicine from time immemorial, and, mixed with honey or sugar, as a sweetmeat—the gum called Terebinthinus Chio. It is the product of the Pistacia Terebinthus, and indicates extreme summer heat and dryness. In the desert of

Sahara it is the last plant to give in, according to Tristram, standing an amount of heat and dryness which no other tree or shrub can bear. It grows freely on my rocks at Mentone, producing the same gum as that offered to me at Chios. Evidently thorough shelter from the north produces at Chios the same climate conditions; and I have no doubt that a more minute examination would have shown that the vegetation of this lovely southern island, and that of the more sheltered region of the Genoese Riviera, are identical, notwithstanding the difference of latitude. The more complete protection of the latter makes up for the more southern latitude of the former.

The Cyclades all belong to the modern kingdom of Greece, whilst the Sporades are still under the dominion of the Turks, who have been their masters from the time of Solyman the Great, who took Chios in 1566. It was long an appanage of the Sultana mother, who used to send officers yearly to collect taxes, and the mastic gum was much used by the ladies of the Seraglio for chewing. Protected by the influence of successive sultanas Chios became very prosperous, rich, and populous. In 1822, however, the inhabitants joined Greece and rose in insurrection. The Turks defeated them, again took possession of the island, burnt the city of Chios, massacred thousands of the inhabitants, totally ruining the island. It is only now beginning to recover from this cruel blow.

My destination was Smyrna, which we reached that day, but as Smyrna is on the mainland, on the south shore of the Mediterranean, I shall leave what I have to say respecting it for the third section of this work. I will only add now that we embarked at Smyrna a few days later, on board a large Austrian Lloyd steamer, on its way to Constantinople from Alexandria and Beirout. I found on board this fine steamer a most delightful state of things, nearly 1200 Mecca pilgrims! Fortunately, the weather was beautiful and the sea calm, so they did not come to grief; but had we encountered a forty-eight hours' storm, such as I have known even in spring in the Mediterranean, with hatches down, and waves rolling over the vessel, I

really think hundreds must have perished. They filled the vessel, upper decks, and lower decks, like sheep in a pen on market days, and presented a most singular and interesting aspect. I was as busy as a bee all the time I was on board studying, observing, analysing; it was Bagdad, Damascus, Ispahan, brought home. Every Eastern race, every species of Eastern costume, every age, was represented. They had all with them a small mattress or carpet, on which they lay, and in which they rolled up their cooking utensils, for they had no other luggage, only the clothes on their backs. Amongst them were also some Russian pilgrims returning from a pilgrimage to Jerusalem. All, both Mussulman, Turks, and Christian Russians, who escaped the dangers of their pilgrimage, and reached home safely, for the rest of their lives would be considered saintly men, and would be treated with great reverence and respect by their countrymen. They really deserve some such reward on this earth for their courage and self-abnegation, for they run great risks from pestilence, from famine, and from the dangers of the deep. I heard from the captain of an Alexandria boat on which I was travelling lately, that a short time before 120 pilgrims had been washed off the deck of an Austrian steamer and drowned, near Alexandria, "without its being any one's fault," a good illustration of the danger of deck-loading to all parties. This I quite believe, when I think of my own experience; had a large wave washed our decks it must have carried hundreds overboard. We had certainly above 500 on the upper deck alone.

It was impossible not to watch with intense delight the inner and outer life of this crowd of Orientals, massed together in so small a compass. The ship gave no provisions, merely water, but they all had a little store in hand, principally rice, dates, bread and coffee. On every side the cooking was going on with spirit-lamps, three or four combining for the purpose, and sitting cross-legged round the fire watching the preparation of their modest repast. I could not help thinking what tons and tons of food would be required by 1200 Englishmen like myself similarly situated. All kinds of odd scenes were taking

place in a quiet impassible way. One little incident roused the apathy even of our Eastern fellow-passengers. A middle-aged dignified Turk had bought in Egypt, as a slave, a negro boy of fourteen, and for some omission or other beat him unmercifully. A sailor saw the chastisement given and told the Austrian captain. The latter at once went to the Turk and took the boy away, saying that he was free from the moment his foot had touched an Austrian ship. At first the Turk could not be made to understand what had happened, it seemed so strange to him that he should not be able to do what he liked with his own property—a not un-English sentiment. At last his loss was made clear, when he burst into a series of loud lamentations that were heard all over the vessel, tore his beard, his hair and his clothes, and in the Eastern way threw what ashes or dirt he could find on his head. He met with no sympathy or commiseration from the Europeans. All the sailors and passengers were positively delighted at what had occurred; and the poor Turk was told to cease his outcry or to carry it on *sotto voce*, or the consequences to himself might be most unpleasant. So he collapsed, curled himself up, and remained for the rest of the journey a prey to grief—a ruined man, as he had exclaimed many times. We landed some of our Eastern passengers at each of the islands and ports we passed, at Mytelene (Lesbos), Tenedos, Lemnos. This was always a most interesting ceremony with the bare-legged, turbaned, full-breeched boatmen and the awkward Oriental passengers, but the greater part of them were destined for the mainland, for Turkey proper.

This latter part of our cruise was as enjoyable as the first. The various islands we passed and stopped at were as lovely as those described, and presented the same characteristics. As all the Sporades, however, are under the dominion of the Turk, and partly inhabited by Turks, there was the additional charm of Turkish Orientalism, costume and manners, about them and around us. Thus at Smyrna we took up the harem of a Turkish pasha and governor, and carried the ladies with us to a town on the Dardanelles. A tent was made on the deck, and they were

there located with their attendants and children. The pasha appeared occasionally, walking about in a shuffling dignified manner and casting a master's eye over his belongings. We got occasional glimpses of the ladies, but recognised no great beauty amongst them. They all seemed very cheerful and happy, and intensely interested in what was going on around them, constantly looking out slyly between the folds of their tent at the novel scene. The European ladies on board appeared to look upon them with great pity, I may say even with supreme contempt. The landing of these ladies was a great business, and was accomplished with great ceremony. Numerous boats came out; they were wrapped up until they looked like bundles, or coiled up mattresses, and with their slippers half off they were actually "bundled" overboard.

Surrounded by all this strange life, immersed in practical Orientalism, Mecca pilgrims of twenty races, harems, Turks, Jews, Armenians, Negroes, soldiers in outlandish uniforms, civilians in queer costumes, we passed along the coast of Troy, were shown the exact site of the old city, and the precise point on the coast where the Scamander enters the sea. Then we entered the far-famed Dardanelles, crossed the Sea of Marmora and anchored, at last, in the Golden Horn of Constantinople, May 15, 1872.

CONSTANTINOPLE.

Constantinople is situated at the southern entrance of the Straits which separate Europe from Asia, and extend from the Sea of Marmora to the Black Sea. The Straits, about twenty miles long, are of variable width, but generally about that of the Thames at Greenwich. The old city is built on a narrow promontory which rises gradually to a height of 200 feet. Its southern slope is in the Sea of Marmora, and the northern forms one side of the Golden Horn, an inlet of the sea which leads up to the mouth of a little river, three or four miles distant—the Sweet Waters, a pretty name. Here the Sultan has a summer palace, and a garden or shrubbery.

On the opposite side of the Golden Horn inlet the shore also rises by a gentle slope to an elevation of about 200 feet, and

here modern Constantinople has spread without limit. The highest point is occupied by the Pera or European quarter, composed of one long street about thirty feet wide, and of many smaller ones leading into it, some fifteen feet wide. The houses are like those of a small French provincial town. An extensive area, at least half a mile square, when I was there (1872) was one mass of charred ruins, the trace of a great fire which had occurred the previous year; only a few of the houses then destroyed had been rebuilt. These suburbs are connected with the old Turkish town by the celebrated and picturesque bridge of boats, about twice as long as London Bridge. On the other or Asiatic side of the Straits, a mile distant, lies the town of Scutari, which also ascends a hill rising gently from the water's edge.

Constantinople as seen from the water is certainly as picturesque as it is reputed to be; nor was the effect marred in my eyes, when I landed. The variety of race, the quaintness of costumes, the intensely Oriental character of the entire scene, made more than amends for the smallness and meanness of the wooden houses, and for the absence of monumental buildings such as are met with in other European capitals.

On the very day of my arrival I took a caique, a deep narrow light boat or canoe, without rudder, pointed at both ends, peculiar to Constantinople, and went up the Golden Horn to "the Sweet Waters." For the first few miles it is like the Thames at Wapping, both shores being covered with timber and ship-yards, ironworks and marine stores, but as we recede from the town, and the inlet narrows between two low sloping grass-covered hills, the landscape becomes more rural. Trees appear on the road on each side, and when we reach the Sultan's palace, about five miles distant, the scene assumes the aspect of Richmond or Hampton Court—a narrow river between low hills, with trees dotted at the base, and the palace and gardens in the background. It was a holiday, and underneath these trees were many festive groups from the city in every variety of costume, conspicuous among which were Turkish ladies with their little children, several eunuchs, and negro servants. The lower part of the face was carefully covered

with a muslin band, so as only to allow the eyes to be seen; notwithstanding this precaution I thought I saw several pretty young physiognomies.

The trees were, principally, Ailantus glandulosa, Celtis occidentalis, Melia Azedarach, Acacia in full flower, Populus alba, Ash, Plane, Elm, Robinia Pseud-Acacia, Arbutus, Horse Chestnut, going out of flower. The Sultan, like his subjects, had come to have a picnic dinner at his country house, so I could not examine the garden. The trees and shrubs that surrounded it appeared the same as those outside. I saw the dinner landed from a gorgeous caique, all gold and ornament. Each dish, large and round, wrapped in a velvet bag, was ceremoniously taken out of the boat and placed on the head of a swarthy Turkish attendant, who forthwith marched off to the palace with his burden, in truly Oriental style.

I subsequently went over the grounds of the Seraglio Palace in the old town (May 16), and there saw all the trees mentioned flourishing and in perfect health; also large Plane and Linden trees, Sambuca, Laburnum, some Oaks, both deciduous and evergreen, the former not quite in full leaf; Euonymus japonica, simple and variegated; Judas going out of flower; small Deodaras, Pinus Pinea, large Cupressus Lambertiana, Tournefortii, Aleppo Pine. The flowers were those usually seen in the South of Europe in May—Antirrhinum, Delphinium, Stocks, Nemophila insignis, Marigold, garden Daisies, Bengal Roses, Banksias, Cineraria, Verbena, Hollyhocks (not in flower), Aquilegia.

The Antirrhinum grows wild in many localities of the Mediterranean in two varieties, a light yellow and a light purple. I found the ruins of Ephesus covered with the latter, as also with a large Campanula, just like our garden Canterbury Bell. This I have not seen elsewhere, but a travelling companion, just returned from Syria and Palestine, told me that he saw it also growing wild, although not large, in many parts of those countries. He likewise found, in the same localities, growing wild in great abundance, the Hollyhock, generally dwarfish in development, no doubt owing to the scantiness and dryness of the soil; in some very dry places he saw it in full flower when not

more than six inches high. I subsequently saw Larkspurs growing in great luxuriance and abundance, wild, in Bulgaria, between Varna and the Danube.

Thus it would seem that many of our common garden flowers have originated around the Mediterranean, and have, probably, been the garden flowers of our horticultural predecessors for thousands of years. Who can tell whether the Antirrhinum and Campanula I saw at Ephesus may not be the lineal descendants of those that gladdened the eyes of the Ephesians two thousand years ago?

Around the base of the promontory on which stands Stamboul, or old Constantinople, are still extant, in very tolerable preservation, although in ruins in many places, the walls that formerly defended the city, as also the towers that strengthened them every fifty yards. These walls extend four miles, from the sea of Marmora to the Golden Horn, and are triple, with moats, or ditches, between each. Being turned to the south-west and protected from the north by the city, they constitute by far the most sheltered region of Constantinople or its vicinity. The ditches or moats are now cultivated as kitchen gardens and orchards, whilst the walls in ruins are clothed with plants and trees, sown by the wind and by the birds. I rode slowly along the entire circuit, carefully examining the vegetation.

The vegetables grown were Peas and Broad Beans (ripe), Artichokes, large Tomatoes, small plants; vigorous Melons and Gourds, small plants. There were many Fig trees, scarce or absent elsewhere; large, magnificent Walnut trees in great numbers, little seen elsewhere; Mulberry trees in great numbers; Cherry trees, fruit not ripe, only beginning to colour; Pears small; Elderberry in flower, quite trees, and numerous; Loquats, fruiting; Pomegranates in flower, Almond, large trees; Peach, Apricot, fruit large; Vines, flower buds just appearing. The ruins themselves were covered in places with Ivy and Lentiscus, and with many of the trees above named, self-sown, growing out of the crevices. Here and there I saw the Honeysuckle and wild Rose in flower among the brushwood. There were no Palms, Opuntias, Aloes, Orange or Lemon trees, even in the most sheltered spots, nor did I find them anywhere at

or near Constantinople. The only fruit seen in the shops were Oranges, Strawberries, and Cherries, the latter not ripe. The Oranges were very large, lemon-shaped, from Jaffa and Tyre, and dear.

The three most remarkable trees at and near Constantinople are the Platanus orientalis, the Celtis occidentalis, and the Cupressus pyramidalis. They all there become timber trees, and attain a size which I have seen equalled nowhere else in the Mediterranean. The Plane trees especially are prodigious in size and most venerable in age. There is one in the yard of the Seraglio, well known to botanists, which is supposed to be above two thousand years old. Its circumference is enormous, and in a large cavity of its trunk lived for a century or more the outer janitor or policeman of the Seraglio. It is, however, still a fine handsome healthy tree, covered with foliage. Another Plane tree, of nearly equal dimensions, at Bayukdere, on the Bosphorus, was an old and venerated tree at the time of the Crusaders, and is called the Plane of Godefroy de Bouillon. The Celtis occidentalis is seen everywhere as a timber tree, as large as or larger than a hundred-year-old Oak. It is met with, equally well developed, in Spain; there are some very fine trees on the public square at Grasse, near Nice. The pyramidal Cypress overshadows Constantinople, for it is planted in the Turkish cemeteries, which occupy a considerable part of the city, inside and out. These cemeteries are not enclosed by walls, and are traversed by paths and roads in every direction; they are the resort of all on whose track they lie. The Turks show their respect for the dead by not disturbing them, otherwise they live with them familiarly, attracted, perhaps, in part by the shadow of the Cypress trees, which attain an altitude and a trunk development unknown elsewhere.

At the summit of the hill, on which stands the Pera, or Frank quarter, there is a garden of some three or four acres in extent, recently made and planted, and intended as a kind of Vauxhall or Tivoli coffee and music garden. I examined it carefully, thinking that it must illustrate the vegetation of the locality, as the directors would be only likely to plant what they knew would succeed. I only

found the plants and flowers named above, and among them scarcely one that would not grow in England. There is nothing southern or Oriental to be observed.

This remark applies to the entire vegetation of Constantinople and of its vicinity. Evidently the winters are cold; the air must be, and is, so cooled by the proximity of the cold Black Sea, and of the ice-bound countries around it, that nothing absolutely southern can thrive. At the same time, all plants that can stand moderate winter frost, and yet rejoice in intense dry heat in summer, live and flourish. Constantinople is in latitude 41°; the mouths of the Danube are in latitude 45°, a difference of four degrees, or 240 miles only, without intervening mountains. The Danube is frozen every winter to its sea outlet, for four months, from November to March, and frozen to such a depth that carts often cross it where it is two miles wide, as opposite Rustchuk, in latitude 43° 30′, merely 150 miles from Constantinople. The wonder is that the latter city is not colder, a fact that can only be explained by the proximity of the sun-warmed Mediterranean. Thus, the absence of mountain protection from the north exercises a very marked and most unfavourable influence on the winter climate of Constantinople.

Constantinople is certainly a very fascinating place for the European traveller. The population is 400,000, but of these about one-half are Armenians, Greeks, and Jews. The Turkish women always appear in the streets veiled, only showing their eyes, whilst the Christians leave their faces uncovered. The Armenian women often dress in Oriental fashion, and being frequently very good-looking, contribute to the scene the element of Oriental feminine grace. The veiled Turkish women soon cease to attract attention, for they are mere waddling bundles of clothes, much to be pitied when really pretty, for all their good looks are entirely lost on the public; on all but their fathers and husbands—a sad state of things!

I must, however, leave the description of Constantinople, of its mosques and bazaars, of its Dervises and cemeteries, of its curious customs and ways, to others. In six days I managed to see all that was most interesting, by confiding

myself entirely to an experienced dragoman, by far the best plan in an unknown locality when pressed for time. By his advice, when thirsty or exhausted between meals, I merely took a Turkish cupful of coffee, which contains about a third of an English teacup, with an invariably good result. It is the Oriental mode of meeting fatigue, thirst, and exhaustion, and is an infinitely better and safer one than ours of taking wine, beer, ices, iced water, or solid food under such circumstances. The desired restorative effect is produced, and no ill effects follow, no indigestion, no heartburn. When we do take coffee in the daytime we clearly take three times too much.

Once at Constantinople, the natural way home for us western Europeans is by the Danube. I took this route myself, and shall make a few remarks on it, partly to guide others, and partly because this journey, which carries the traveller from east to west behind the mountains that shelter the north-east shore of the Mediterranean, completes the study of that shore.

The usual course adopted, and the one I followed, is to take steamer from Constantinople to Varna, the railway from Varna to Rustchuk on the Danube, and then to embark on the river steamers for Pesth and Vienna. We started at four P.M. from the Golden Horn, and after steaming through the Straits, reached the Black Sea. The Straits of Constantinople, the Thracian Bosphorus of former days, form the communication between the Sea of Marmora and the Black Sea. They are never more than a mile and a quarter wide, and are limited on both sides by gently rising, tree-covered hills, dotted with villages and with country villas, belonging to the wealthy classes of Constantinople.

Once in the Black Sea, we soon lost sight of land, and reached Varna the next morning at nine. We saw the wall-surrounded town situated on an eminence to our right, but did not enter it. We were taken straight from the ship to the railway station, a few hundred yards from the shore, started at ten in very comfortable carriages, and arrived at Rustchuk at four, after passing through a level country but little inhabited or cultivated, principally grass land. Rustchuk is a hundred miles from the mouth of the

Danube, and the point where the Danube steamers take up and leave their passengers. Before long there will be a railway direct from Constantinople to Rustchuk, which will save the Black Sea voyage. The line is already open to Adrianople (1874).

The Danube steamers are large commodious vessels, and being fitted up with every convenience and comfort, a journey by them becomes a positive pleasure. I greatly enjoyed the combination of comfort and ease with the sense of rapid motion. There were many clever, intellectual persons on board, gentlemen and ladies, Roumans, Germans, Russians, and all spoke French perfectly, so it was the general medium of conversation. We became very friendly and communicative, sitting on the deck in easy chairs, sipping coffee three or four times a day, and watching the willow-clad shore fleeting rapidly by. Various subjects of conversation, social, ethical, literary, and political, were broached and discussed with a fire, an energy, an eloquence very foreign to our Northern ways. These *al fresco* conversations and wordy tournaments gave an additional charm to our progress, and beguiled the time very pleasantly.

We should have appreciated still more the pleasurable features of our Danube voyage had it not been for the intense heat. On May the 19th we had 92° Fah. all day in the saloon cabin, and on deck, under the awning, we had 90°, and on the 21st 88°. The nights were cool, about 70°, but we were told that in a few weeks, by the middle of June, they would be as hot as the day. Whilst I was at Constantinople the thermometer was never more than 80° in the day and 70° at night. The greater heat of the Danube region, considerably to the north of Constantinople, at the same period of the year, was no doubt owing to its distance from the sea. It is a well known fact in physical geography that all continental regions are warmer in summer and colder in winter, than the sea shore; the sea water warms the atmosphere in winter, cools it in summer. This intense heat lasted all the way to Pesth in Hungary, except during the few hours that we were passing through a mountainous region, called "The Gates of Iron."

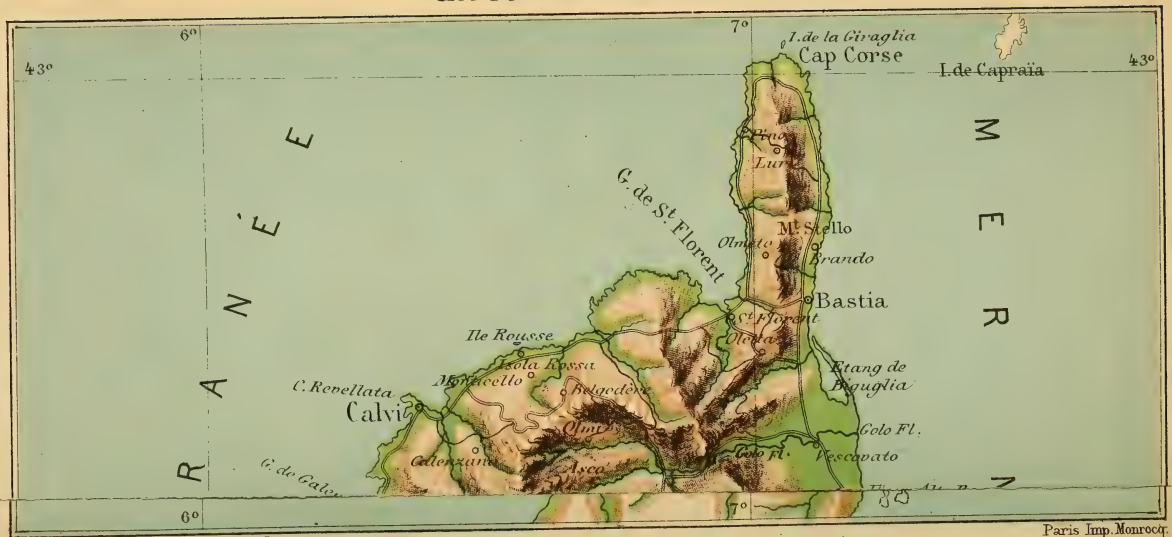
We were two nights and three days steaming up the Danube from Rustchuk to Pesth. Some of our party left the steamer at Basiasch to take the rail for Pesth, thereby saving twenty-four hours river travelling at the expense of twelve hours on the railway—a bad bargain according to my view of the case. During all this long voyage we were passing incessantly—at the Iron Gates excepted—through a low alluvial plain, with banks from one to three feet high, lined with Willows and Poplars, Poplars and Willows. Gradually the conviction forces itself on the mind that there may be 800 species of Salicinæ, as described by a recent author in a monograph on the Willow family! They are certainly found everywhere, from Cape North to the "Waters of Babylon," wherever water exists. There were other trees in the background, but it was difficult, if not impossible, to recognise them, as the steamer passed swiftly by at some distance from the shore; they were clearly all northern types of vegetation. The south was hidden from our view by the mountains which fringe and protect the north-eastern shore of the Mediterranean. We were travelling due east and west, on the north side of these mountains, which screen the eastern Mediterranean and its islands from northern blasts.

The first day our course was due west, along the northern frontier of Bulgaria. On the southern horizon we saw, all day, the Balkan chain of mountains, running east and west, and covered with snow. At this time of the year, the presence of snow on a mountain in latitude 42° implies that it is at least 6000 feet high. This high chain it is that protects the Ægean Sea and the Grecian Archipelago. The Balkan chain is continuous with other high mountains that continue the protection westwards; but the principal, most complete, and deepest protection to the north shores of the Mediterranean is evidently that afforded by the Alps of Tyrol and Switzerland, which form a tremendous barrier to the north winds. Thence it is that on the Genoese Riviera we have Orange and Lemon groves, Palms and tropical plants, and a complete absence of frost in sheltered places; whilst at Rustchuk, in nearly the same latitude (45° 30″), the Danube is frozen down to the sea

for four months every year. No known fact in physical geography could better illustrate the influence of protection as regards climate and vegetation.

This journey in the Eastern Mediterranean, and the return by the Danube, proved intensely interesting to me, and cleared away much obscurity from my mental vision respecting the climate of these regions of the Mediterranean, which I had not previously visited. I confess to having expected to find Genoese Rivieras all along the coast. I thought, guided by classical reminiscences, that the Grecian islands were covered with bowers of Roses and groves of Orange trees. I thought Smyrna was in a Palm forest surrounded with orchards of Lemon trees, and that Constantinople was in vegetation a truly southern city. Instead of this, I found the Grecian coast all but devoid of subtropical vegetation, the Grecian islands mere sunburnt, wind-scarred rocks, except in sheltered folds or nooks; Smyrna growing Heliotropes and Pelargoniums in pots, Orange trees only as bushes behind high walls, with an additional shelter of trees, and Constantinople with an all but northern vegetation, that of Madrid with its cold winter and hot summer. Yet by an attentive scrutiny of the map, these facts might have been foretold, for they are in strict accordance with the data given by physical geography.

LA CORSE (CORSICA)



Gravé par Erhard 12 r. Duguay Trouin Paris.

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Kilomètres

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PART II.

THE LARGE ISLANDS OF THE MEDITERRANEAN.

CHAPTER XI.

CORSICA.

ITS PHYSICAL, GEOLOGICAL, BOTANICAL, AND SOCIAL CHARACTERISTICS—ITS HISTORY—ITS CLIMATE—AJACCIO AND BASTIA AS WINTER STATIONS—OREZZA AND GUAGNO AS SUMMER STATIONS—SARTENE, BONIFACIO, AND THE EASTERN COAST.

"My dream is of an island-place
Which distant seas keep lonely,
* * * *
An island full of hills and dells
All rumpled and uneven,
With green recesses, sudden swells,
And odorous valleys driven,
So deep and straight that always there
The wind is cradled to soft air."

The Island.—E. B. Browning.

Those who pass the winter at Cannes, Nice, and Mentone have, generally speaking, only the wide expanse of the Mediterranean before them. Occasionally, however, when the sea is calm and the air is peculiarly clear, a bold mountain land, formed by a series of irregular peaks, is distinctly seen rising out of the sea, on the far south-eastern horizon.

I shall never forget the impression this sight first produced on me. I had been some weeks at Mentone, and had sat day after day for hours looking at the open sea, which I supposed to be a liquid desert for many hundred miles, as far as the sandy coast of Africa. One morning, rising a little after the glorious Mediterranean sun had emerged from the eastern sea, I opened the window and

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looked out. To my amazement I beheld before me a range of mountain summits, like the Alps seen from the plains of Lombardy. It appeared quite a glimpse of fairyland. As the sun rose higher and higher the distant mountains became indistinct, and finally vanished. This was Corsica. The irregular peaks were the summits of the Monte Cinto, the Monte Rotondo, and the Monte d'Oro, mountains from six to nine thousand feet high. I have often seen them since, but seldom with the same vivid distinctness.

The period of the day when the Corsican mountains are most frequently and most vividly seen is just before sunrise, the sun during most of the winter rising just behind them; as it ascends in the heavens, they rapidly

fade and disappear. Sometimes, however, but rarely, they remain apparent throughout the day. Masses of white clouds anchored on the higher mountains are often observed. That they are resting on the Corsican mountains is evident from their complete immobility. The distance from shore to shore being about ninety miles, and at least one hundred and thirty to some of the higher peaks—that of Monte d'Oro, for instance—the first or lower two or three thousand feet of Corsica cannot be seen at all, under any condition of atmosphere, owing to the sphericity of the globe. When thus visible from Mentone, the view of these mountains becomes much more complete, much grander, if the higher levels are reached. From the top of the Berceau the entire range of the Corsican highlands is seen.

These occasional glimpses of a far-distant land impart to Corsica a kind of mysterious charm. We have our beds placed in view of the east windows, that we may awake by times in the morning, and both luxuriously enjoy the magnificent hues of the rising sun reflected on cloud and water, and also scan the horizon for the "fair island." When seen in the day, all communicate to one another the important fact; the more interesting from its portending, according to the local weather-wise, a break-up in the weather—rain, or storm—a statement which my own experience leads me to doubt. Great clearness of the atmosphere means dryness and northerly winds, which in winter in this region imply the probable continuance of fine weather.

I may safely assert that nearly the entire English population of Mentone, under the influence of these feelings, is each winter possessed with a strong desire to visit Corsica. Not only was this desire all but irresistible with me, but I had other reasons for wishing to explore its shores and mountain land.

I had become deeply impressed with the unhygienic, unhealthy state of the large towns of the south, misnamed health-towns. I had become convinced that, owing to the absence of hygienic precautions, all the large centres of population in the south of Europe, pernicious to the strong and sound who inhabit them, are totally unfit for the diseased, health-seeking community. As a necessary sequence, the only safe residences for such invalids are small, sparsely-populated places, such as Hyères, Cannes, Mentone, San Remo, or the suburbs of towns such as Pau and Nice, in which extra-urban villas have been built expressly for invalids. These really healthy winter stations, however, are not numerous, and I was anxious to increase their number, and believed that I might find in Corsica good winter residences. I also hoped to discover in its highlands a cool mountain locality fit for a summer station, a want much felt by those who winter in the south, and do not wish to return to England in the summer.

On inquiry as to the means of reaching Corsica, I could gain but little information at Mentone. None of the in-

habitants had ever been there, and they seemed to look upon it as a very inaccessible place, in a state bordering on barbarism. I therefore wrote to "the principal" bookseller at Bastia, the chief town, for a map and a local guide, and to Marseilles and Genoa for information about steamers. In due course I received the information applied for, and found, as usual, that every difficulty vanished. I also met with two very agreeable travelling companions, an English clergyman and his lady, with whom I left Mentone for Genoa April the 15th, 1862, by the beautiful Riviera road. Two English ladies subsequently joined us at Ajaccio.

We entered Genoa on a lovely summer afternoon, and found the entire population out-of-doors in holiday costume. Genoa looked as beautiful and interesting as it always does in fine weather. The next morning I went to look after the steamer, which starts every Saturday at 9 P.M. for Bastia, touching at Leghorn. To my dismay I found that it was my old friend, or enemy, the *Virgilio*. I imagined it had, many years ago, been broken up, either by the winds and waves, or by the hand of man. There was, however, no help for it, no other boat went to Corsica, and to the *Virgilio* we had to entrust ourselves.

The weather was beautiful, the sky clear, the sea calm, the barometer at set fair, and this time the old boat slowly but surely performed her allotted task. We steamed quietly along the coast, sitting on deck, and enjoying the beautiful scenery until dark. Then we went down and slept until we reached Leghorn early the next morning, but several hours later than we should have done by one of the ordinary Leghorn steamers. After unloading cargo at Leghorn, and taking in passengers and goods, we again started at nine, and arrived safely at Bastia at five in the afternoon, the usual passage by a good steamer from Leghorn being five or six hours.

The engineer was a short, stout, good-humoured countryman of ours, and an interesting specimen of the philosophical roving Englishman. He was born and bred, he told me, at Liverpool, and had come to the Mediterranean some twelve years previous; he had served in every part of

that sea, and had never once been home. He had married an Italian woman, who lived with his children at Genoa. His pay was good, and, as he was quite comfortable and happy, he had no wish whatever to return to England. The *Virgilio* was a good sea boat, and her engines also were good, but both were very old—he presumed at least thirty years. She was, he said, slow but sure, and safe in a storm, as, indeed, I had found her many years ago.

On a fine warm summer's day, such as we were fortunate enough to enjoy on the 18th of April, with an all but calm sea, the passage from Leghorn to Bastia is very enjoyable. As the vessel recedes from the mainland, the fine marble mountains of Massa Carrara are the prominent feature. Then as they become indistinct, the island of Elba and the mountains of Corsica come into view. Elba, from the sea, appears merely a mass of rocks and mountains, with but little evidence of vegetation. Still it will ever be interesting to the traveller as the first prison home of Napoleon the Great.

How singular his fate. Born and brought up in Corsica, he finally left it at the age of twenty-three. With the exception of a few hours passed at Ajaccio on his return from the campaign of Egypt (1799), he never saw Corsica again until, hurled from the height of human power, he was chained to this rocky islet, within view of his native land. Between these two epochs of his life, events all but unparalleled in history had taken place. He, the humble Corsican soldier, had been a great emperor, a king-maker and a king-destroyer, and had wielded the lives of men as if they had been mere sand on the sea-shore. Elba is the first land that vividly recalls to mind the great Corsican hero. From that moment his memory was scarcely ever absent from my thoughts. It pervades his entire native country, and is indestructibly mixed up with its past and present history. Indeed, it throws a kind of halo, if I may use the term, over the entire island.

Two other islands are also passed, Capraja and Monte Cristo. They are both mere barren mountainous rocks, but healthy, and capable of being rendered very fertile by human labour under the life-giving southern sun. Capraja is cele-

brated in the past history of Corsica from having been for centuries a field of battle between the Genoese and the Corsicans.

Monte Cristo, which has given its name to Dumas' celebrated novel, is a small, uninhabited islet, that attracted attention some few years ago through the adventures and misfortunes of its owner—one of our countrymen. This gentleman purchased the entire island, and settled upon it, in the regular Robinson Crusoe style, monarch of all he surveyed. He gradually brought a considerable area under cultivation, started a steamer of his own, and succeeded in establishing a flourishing little colony. Misfortune, however, overtook him in the shape of the Italian revolution. Some Garibaldians, on their way to Sicily, landed in the island, and pillaged it. Our countryman's sympathies were with the Duke of Tuscany, those of the six soldiers and of the sergeant, their commander, who formed the island guard, were with the revolutionary side. They quarrelled, he was insulted, and left the island, and the complete ruin of the colony rapidly followed. Redress was sought in the Italian courts, but without success. The Government refused to recognise the acts of the lawless Garibaldians in this the early stage of their career, and the Elba magistrates, siding with the sergeant and his men, fined our unfortunate countryman for rebellion against the "constituted authorities."

The English Parliament was called upon to take the part of the English proprietor, but, after a long debate, the ministers refused to interfere between the parties. Thus ended an Englishman's dream of a little monarchy in the Italian seas. We have all of us, in our youthful days, longed for the possession of just such an island as Monte Cristo, and cannot but feel deep commiseration for the misfortunes of one who had thus bravely realized the boy's paradise. But is not the downfall of the little empire explained by the evident want of sympathy of the king of Monte Cristo for the popular Italian cause? If so, he has fallen with the political party he espoused, with his friend the Duke of Tuscany. It is a political, an historical fall, and not a social one.

As Corsica is approached its alpine character becomes evident; it rises from the sea as a chain of mountains extending from north to south. At the basement little hamlets are seen, five hundred or a thousand feet above the sea-level, clinging to the wood-clothed mountain sides. The town of Bastia is not discovered until we are but a few miles from the coast; it then appears as a cluster of white houses rising gently above the shore.

We landed in a small and secure harbour, but so narrowed by the jetty that in bad weather the entrance is very difficult. Some years ago the mail steamer was lost through striking against this jetty in a stormy night, and forty souls perished, although within a few feet of the shore. As we rowed quietly in, for our steamer was going on to Porto Torres in Sardinia and had stopped outside, the precise spot where the vessel had struck was pointed out to us. It was all but within the little harbour and so near land that it was difficult to understand the catastrophe. With the calm, smooth sea we then had, the entire crew might have jumped ashore.

Another and larger port is now being constructed, to the north-east, by means of large blocks of artificial stone. These blocks are made on the spot, of immense size, and of any required form, and much facilitate the construction of piers and sea-walls. The new port of La Joliette, at Marseilles, has been made in this way. The construction of this harbour will be a great advantage to Bastia, the small port of which is now inconveniently crowded with shipping.

The channel between Italy and Corsica is considered a smooth sea, for Corsica acts as a breakwater to the south-west and north-west; but still there is occasionally a very heavy sea in it, as I had experienced to my sorrow. This is more especially the case when south-west or north-east winds reign.

Many years ago, in 1839, when resident medical officer in the Paris hospitals, I had a friend, a young Corsican physician, M. Piccioni, a clever, energetic man, whose professional prospects were even then considered very good. Our friendship shared the fate of many such youthful ties;

we parted, he for his native country, I for mine, and never heard of each other again. As soon as we were comfortably settled in the Hôtel de l'Europe, an inn very similar to what we should find in a small French continental town out of the track of tourists, I inquired for the friend of former days. To my delight and surprise I found that he was alive, a flourishing, universally esteemed man, and actually living at Bastia. I had also a letter of introduction to Dr. Manfredi, head surgeon to the Bastia hospital, and the leading operating surgeon of the island. We were most cordially welcomed, I and my companions, both by the old and new friend, and, thanks to them, ever after felt quite at home in the island. They transferred us to other friends and relatives at each successive stage of our progress, and as we were everywhere received with great cordiality, we prospered wherever our steps were directed.

We remained some days at Bastia, exploring the town and its neighbourhood, and then went to San Fiorenzo. From thence we pursued our journey to Calvi, to Corte, and finally to Ajaccio, whence we embarked for Marseilles, having passed three weeks very enjoyably in the island. The weather was splendid from first to last, the mountains were ever pure in outline and free from clouds, the sky was blue, the sun shone brightly, no rain fell, and the country was in the glory of early summer, of poetical spring.

I shall now endeavour to convey to my readers, as briefly as possible, the results of the experience gained during this excursion, as also during two subsequent tours made in the island in the spring of 1865 and in that of 1868.

Corsica is the third largest island in the Mediterranean, Sicily and Sardinia being both of greater size. It is situated between 41° and 43° of north latitude, and between 6° and 7° of east longitude. The distance from the coast of Italy is 54 miles, from that of France 90; its length is 115 miles, its greatest breadth about 54 miles. Corsica is a mere mass of alpine ridges rising out of the sea like a vessel; the mountains attaining the highest elevation in the centre.

Two mountain ranges form the island, running longi-

tudinally through it from north to south. The eastern range commences at Cape Corso, a narrow longitudinal mountain, some 3000 feet high, and more than 20 miles long, the base of which is bathed by the sea both east and west. This range is secondary, calcareous, and descends to the south at a moderate elevation. The second range is primitive, granitic; it commences near the west coast at Isola Rossa, rises rapidly to a height of 8000 and 9000 feet, and runs through the island down to its southern extremity, to within a short distance of Bonifacio.

The different geological nature of these two mountain ranges has, in the course of countless ages, modified the character of the eastern and western shores.

The eastern range, composed, as stated, of secondary calcareous rocks, is more easily disintegrated and washed away by the action of the elements. Owing to this cause the rivers which descend from its sides, and from the central regions of the island, through clefts which these calcareous mountains present, have deposited at their base alluvial plains of considerable extent. Through these rich alluvial plains several large streams meander to reach the sea. This they accomplish with difficulty, owing to the lowness of the shore, and to the prevalence of the scirocco or south-east wind, which constantly throws up large masses of sand at their mouths. Hence the formation along the eastern shore of large salt-water ponds and marshes, into which some of the rivers empty themselves.

Under the burning glare of a Mediterranean sun these terrestrial conditions—large ponds of brackish water, marshes, and rich alluvial plains, liable to periodical overflow—embody all the elements calculated to produce malarious fevers of the most deadly character, and by such fevers is this region rendered all but uninhabitable for four months, from June to October.

The western, primary, granitic range of mountains is the real backbone of the island. It must have been thrown up long before the secondary eastern range, is very much higher, and is covered in some regions with eternal snow. This range is jagged and irregular in its outline. It throws

out high granitic spurs towards the western sea, which extend into the sea, and form deep bays or gulfs, as is usual with primary rocks.

These spurs divide the western side of the island into deep, wide, picturesque valleys. At the bottom of each valley runs a brawling stream, which carries to the sea the watershed of the high snow-clad mountains, and forms an alluvial plain, of greater or less extent, as it nears the coast.

Disintegration, however, during the geological period has been slow, owing to the granitic character of the mountains, and the rivers have carried less soil to the sea than those of the eastern or calcareous side of the island. The alluvial plains are, consequently, all but confined to the mountain valleys, and the sea is very deep near the shore. On this side of the island are all the natural ports, with the exception of that of Porto Vecchio on the south-east coast. Thus there are no ponds, the marshes are small in extent, limited to the immediate vicinity of the outlet of the rivers, and intermittent and remittent fevers in comparison are by no means so common.

The spurs which limit the western valleys being very rugged and of great height, the peasants who inhabited them were all but cut off in former days from communication with mankind, on every side but that of the sea. A coast road which ascends and descends the granitic ridges, has been recently completed from Bonifacio to Ajaccio, Porto, Calvi, Isola Rossa, and Bastia. As there is also a good road from Bastia to Bonifacio on the eastern coast, Corsica is now completely encircled by a carriage road connecting every region of the coast.

Between the eastern and the western ranges of mountains there is a highland country, an elevated mediterranean area of mountains and valleys, which forms about one-fifth of the entire superficies of the island.

The botanical productions of Corsica assimilate, as might be presumed, to those of the countries that surround it. The north, by its vegetation, approximates to the Riviera, the east to the Italian coast, the west to Provence and Spain, whilst the south, and I may say the entire island, shows decided African affinities. Indeed, in a subsequent

survey of Algeria and Mount Atlas, I was rather surprised to find the vegetation of the granitic and schistic regions of the Atlas mountains all but identical with the vegetation of these same formations in Corsica.

In the plains on the coast, cereals and Indian corn are grown in considerable abundance, and succeed admirably. The Mulberry tree, also, is cultivated in great perfection, and as the climate is suited both to its growth and to the rearing of the silkworm, there is a great opening in this direction for the Corsicans. On the lower cretaceous hills and valleys the Olive tree abounds and flourishes. The Vine is also cultivated with great success, and admirable wine is made, of rather a full-bodied character, especially on Cape Corso and about Sartene. Higher up, the Chestnut tree grows to a magnificent size, and produces fruit of the very best quality. Entire districts, especially on the eastern side of the island, are covered with splendid Chestnut forests. One of the eastern districts, indeed, having the little town of Piedicroce for its centre, is called the Castagniccia, or Chestnut country. It has ever been famous in history for the unconquerable intrepidity and love of freedom of its inhabitants. Throughout centuries of tyranny and oppression in Corsica they were never entirely subdued, and that principally owing to their Chestnut trees. Formerly, and even now, their main food is the Chestnut, with assistance from the oil of the Olive trees, the wine of the Vines, and the flesh and milk of their sheep.

The Chestnut tree wants no cultivation whatever, no watching. Like the Bread-fruit tree of the tropics, it produces fruit that only requires gathering when ripe, and in this climate it never fails to produce a crop. Thus the inhabitants of the Castagniccia could fight all the year round and yet live. They might be hemmed in on all sides in their mountain fastnesses, all ingress might be stopped for years, and yet they flourished. These times have passed away, and since the end of the last century there has been peace in Corsica; still the inhabitants of the Castagniccia retain their desultory habits. They live, I am told, in sober idleness, play at cards, talk politics all day,

and work as little as they can possibly help. Their artificial modern wants, even, are easily supplied by the sale of the surplus chestnut crop, now rendered easy by the increased facility of communication with the Continent.

The cultivation of the Olive tree on a large scale would appear to engender the same apathy and disinclination to work on the part of the peasantry. There is a region called the Balagna, extending from San Fiorenzo to Calvi, comprising smiling limestone hills and lovely fertile valleys, which is a very garden of Olive trees. It is renowned throughout the island for its richness and for its luxuriant fertility. A leading proprietor informed me that the peasantry, all proprietors, led the same "*far niente*" life of easy enjoyment as their countrymen in the Chestnut districts. The Olive tree requires a little more trouble, it is true, than the Chestnut; it has to be pruned and manured every year or two, the fruit has to be crushed, and the oil sold. Still all this, like the labour of the Irish cottier on his potato-ground, takes but little time. Every year or two an abundant, easily-earned harvest of oil pays off debts and leaves a surplus to live on until the next be ready. Why should he work, says the peasant, when his future is thus secure? People cannot live, however, upon oil alone. It must be sold to maintain the grower, and owing to this reason, no doubt, the Balagna has from time immemorial been conquered and held by those who were in possession of the adjacent coast.

There is a good carriage road from Calvi to Corte, which takes the traveller through part of the fertile smiling Balagna, and also, at a later stage of the journey, through interesting mountain scenery. A day diligence travels along this road every other day, and I have twice performed the journey, with even more pleasure the second time than the first. Sheltered by hilly mountains from the south-west sea winds, protected from the north and east, the Balagna appeared to me truly the abode of peace and of plenty, with its Olive and fruit trees, its Vines and Cereals, and its prosperous-looking villages, each with their quaint little church. The summer heat must be intense, as an evidence of which fact I measured an old Carouba tree a

little beyond Ponte Veglia twenty-eight feet three inches in circumference, three feet from the ground! On this journey I for the first time met with villages, all the cabins of which had flat roofs. Such a construction implies intensely warm summer nights, and an approximation to the East and to the customs of its inhabitants.

Above the range of the Chestnut tree we meet with the Pinus Maritima, and above that, along with it in some regions, the Pinus Larix or Larch. This tree is a native of Corsica, and in no part of Europe does it grow to greater luxuriance and perfection. In some of the primitive forests, noble trees, more than 120 feet in height, are found. Above the Pines comes the Beech, then the Birch, and then the eternal snows.

These details of physical structure explain the history of Corsica. As in most mountain regions of a similar character, for numberless centuries, from days anterior to those of the Romans, its inhabitants were at war with their neighbours, all of whom in succession tried to conquer them. The shores and shore-towns were successively in the possession of the Greeks, the Romans, the Saracens, the Spaniards, the Tuscans, the Genoese, and finally, of the French. But the mountaineers were never conquered. Alternately defeated or victorious, they ever maintained their independence. Conquerors, they drove the invaders from their native soil. Conquered, they retreated to their mountain fastnesses, to the primitive forests which still cover a considerable portion of the island, to the neighbourhood of the eternal snow. There, who durst follow them? The attempt only brought destruction upon their pursuers. Such was ever the history of this small community, then not numbering much above a hundred thousand souls; as noble a race of free men as ever trod the earth.

The history of Corsica is full of heroes, of heroic deeds, of romantic achievements. Each successive century bore patriots ever ready to sacrifice their fortunes and their lives for their country, as in the heroic days of early Rome. Nor were the opportunities for doing so wanting; no sooner was one enemy disposed of than another appeared. Peace

never lasted more than a few years, seldom as long; and each successive generation had thus to renew the struggles which had tested the courage, the patriotism, and the endurance of its precursor.

Is it surprising that the names of these Corsican heroes should be household words? that Giudice della Rocca, Giampolo, Sampiero, Paoli, and many others, should live in the affections of the Corsicans even unto the present day? Is it surprising that the Corsican women should have imbibed and shown, in times now gone by, the stern patriotism of the women of Sparta? or that their "voceros," or chants and national songs, should, up to this day, breathe a spirit of defiance and a love of vengeance unknown to the inhabitants of more peaceful regions?

A population which has for so many centuries—indeed until quite recently—lived in a state of constant warfare against foreign tyranny and oppression cannot all at once calm down to the social condition of countries that have for centuries ceased to fight for their existence. Thus is explained the exceptional social condition that until very recently reigned in Corsica.

The Genoese were, during the Middle Ages and until the latter part of the last century, the most persistent and cruel persecutors of Corsica. They established themselves in Corsica towards the end of the thirteenth century, and gradually gained possession of the coast towns and of a considerable portion of the island. War may be said never to have ceased from that time until the Corsicans surrendered themselves to France in June, 1769, two months only before the birth of Napoleon Bonaparte.

In 1737 the Genoese, finding themselves hard pressed, applied to France for assistance. Cardinal Fleury gladly availed himself of the pretext to establish a footing in Corsica, and sent five regiments to their assistance. From that time the Corsicans had also to fight against France. They defended themselves desperately for thirty years, but at last their great general, Paoli, was defeated, and they had to succumb.

The father of Napoleon I. was a prominent member of the patriotic or anti-French party. He was private secre-

tary to the celebrated chief Paoli at the time the capitulation was signed, and Corsica annexed to France. A few months later his wife gave birth to the great warrior and statesman who was to wield with such terrific energy the destinies of the French, whom his countrymen then looked upon as foreigners and conquerors.

The great and patriotic Paoli, who for a quarter of a century had governed the Corsicans with the wisdom of a Solon and the courage of an Epaminondas, abandoned his native country when it became a mere province of France, and took refuge in London. There he lived for thirty years, in Holborn, a glorious exile from his sea-girt island home. When I gazed on the magnificent mountains, the beautiful clear sky of Corsica, and the glorious azure sea that surrounds it, I often thought of the sad exile of former days. How his heart must have yearned for his own native land in the fog and gloom of a London winter. He could have returned had he submitted to the rule of France, but this his patriotic soul would not stoop to. He preferred to live length of years an exile in a northern land, and there to die, away from the home of his fathers!

Paoli once returned, but only for a few years. When the French became republicans they were ashamed at having extinguished Corsican freedom, publicly apologized, recalled him in 1790, and placed him at the head of his countrymen. The latter soon tired, however, of republican tyranny, appealed to England, expelled the French, and positively annexed Corsica to England (1794). Paoli and his English friends soon became obnoxious in their turn. The Corsicans rose against them, returning to French allegiance, and the French dominion was again definitely established throughout Corsica in 1796.

The generation of Paoli has long passed away. Mighty events—events that have shaken Europe to its very foundations, and totally changed the fortunes and future destiny of the nation that annexed his native country—have taken place. These changes may be traced in a great measure to the genius and to the Corsican tenacity of purpose of the son of one of Paoli's companions and friends. The Corsican character, however, remains the same. The love of freedom,

the firm resolve not to yield to authority against the dictates of conscience, still characterize the sons of Corsica. Corsican exiles within the last few years have reproduced the patriotic self-denial of Paoli.

It is a question whether the Corsicans, with their indomitable pride and individuality, would have submitted so completely to France, had it not been for the marvellous rise of Napoleon Bonaparte, their countryman. As I have stated, Napoleon was born a few months only after the annexation, and by the age of twenty-nine he was general of the army of Italy, at thirty he was first consul, and at thirty-four emperor. The national feeling is still very strong with the Corsicans, and I have often heard it said, half seriously, "It is Corsica in reality that has annexed France, not France Corsica." Every man, woman, and child in the island is proud of the first emperor, and acquainted with every detail of his life. The advent of the late emperor to the throne of France was hailed with a shout of delight and patriotic pride from one end of Corsica to the other, and nowhere has his dynasty more devoted adherents. Yet to the traveller, the country is more Italian than French. Except in the large towns, Italian, or an Italian dialect, is the principal language, and the features and manners of the inhabitants, like the vegetation, are also decidedly Italian.

The Corsicans complain rather bitterly that they are neglected by France and that the very great natural resources of the island are not developed as they might be. This reproach to me appears scarcely just. The first Napoleon, it is true, did but little for his native country, a very singular fact. As we have seen, although born and brought up in the island, which he constantly revisited during the first years of his military career, he never came to it again after his return from Egypt. Perhaps he was so totally absorbed by the Herculean duties that filled his career, as to have but little leisure to think of the material welfare of his native country. Perhaps he was disinclined to draw, in too marked a manner, the attention of the France he governed to his Corsican origin. On one occasion a decree was signed for some important public

works at Ajaccio, but they were not carried out. This he only learnt years afterwards. When at St. Helena, his thoughts, however, reverted constantly to the mountain island that gave him birth. He often spoke of it, and of what he intended to have accomplished for its welfare and prosperity had he remained in power.

Subsequent governments appear to have done for Corsica what they have done for other departments of France, perhaps even more. The French centralized system of law, education, and road-making, has been generally introduced, and every facility given to the inhabitants to mentally improve themselves, and thereby to lay down the foundation of public prosperity. The roads that now connect the principal coast towns, and encircle the island, are excellent, as good as our high roads in England, even in the most wild and uninhabited regions. There also is a very good road intersecting the island from Bastia to Ajaccio. It passes over the two mountain chains, and through Corte, the ancient patriotic capital of Corsica. Various forest roads have been lately made, leading into the heart of the country, into the primeval forests which occupy the high central regions.

The great impediment to the material progress of Corsica, up to a very recent period, has no doubt been the very abnormal social condition of the island. So peculiar and strange was this condition, so foreign to all modern notions, that it may be questioned whether the whole world could offer a parallel. The *vendetta* which characterizes it must sap at the root of all public enterprise and prosperity.

The vendetta is a system of vengeance to the death which has existed for hundreds of years in Corsica, and which was, until recently, recognised and approved by nearly the entire community, including even the less enlightened ministers of religion. Its origin is obscure, but may be traced to the feuds and warfare that existed in the island, dividing the members of families and of communities, ever arming one against the other, to the weakness of authority, and to the difficulty of obtaining justice.

All Corsicans carried firearms. If one man considered himself insulted by another in any way, however trivial

the grounds, he shot him. From that moment the family of the man killed was bound in honour to pursue the murderer, or in his default, some member of his family, and to retaliate blood for blood. This obligation descended from one member of the family to another, until it often ended in the all but entire destruction of both families. Villages, entire communities, would take up the quarrel of their members against other villages, other communities, and thus, in the absence of a public foe, they massacred each other.

I was told by a very intelligent Roman Catholic priest, curé of a remote country village, that the greater part of these feuds originated in jealousy. The general feeling was that any insult offered to a woman ought to be washed in the blood of the offender, by her male relatives, husband, father, brother. This sentiment, he said, was so strong and general, that were the laws relaxed, there would be just as many assassinations as in former times, and, consequently, as many outlaws in the mountains. Indeed, if there was no male relative to avenge them, the Corsican women often revenged themselves.

This latter statement was fully borne out by what I heard at Corte during one of my visits to Corsica. In April, 1865, there were three women in prison for killing their lovers. One, a fine young woman of twenty, of a good peasant family, shot her lover dead in the market-place of Corte, ten days before I arrived. He had deserted her after promising to marry her, positively refusing to ratify his engagement. She was in prison, but my informant, one of the leading inhabitants of Corte, stated that her imprisonment was a mere form, and that she would be either acquitted or condemned to prison for a few weeks only. The entire community, himself included, thought her a very noble girl, who had served her base lover quite right. I subsequently heard that, as anticipated, she had only been condemned to three months' confinement, as guilty of what we should call "justifiable homicide."

This girl, in vindicating her honour, only followed the traditions of her country. Some years ago a young girl

of Ota, whose rather poetical name was Fior di Spina, or Hawthorn-flower, killed her lover for the same cause—his refusal to marry her. One of her compagnons improvised a "vocero" or ballad, which I give below, both as illustrating the feelings of the Corsican women on such occasions, and as a good specimen of the language spoken to this day. It will be perceived that it is thoroughly Italian. This vocero is published by M. Jean de la Rocca, in an interesting work entitled "La Corse et son Avenir." 1857.

VOCERO.

"Stamane, in piazza d'Ota,
T'hannu messu la courona
Tissuta in oro ed in argento,
Secondu la to personna,
Dapu stu colpu di pistola
Che in Corsica risona.

"Arrivata da u su babu,
Si vesti da grand' guerriera,
Carca di ferru et di piombu,
Colla carchera e la tarsetta,
Lu stilettu e la pistola,
Dicendo: Oggi e u me sicretu.

"Quest' avia un cuore d'un lione,
D'una tigra allatata.
Ha stesu lu bracciu colla pistola,
Ed in capu la sbarata,
Dicendo: Anima infidele,
La tu morte è preparata.

"Deh! portatemi a Tallavo,
Dove so i banditi più fieri,
Giacomo e Santa Lucia,
Questi cuori bravi e guerrieri,
E con elli in compagnia,
Girero boschi e sentieri."

LITERAL TRANSLATION.

"This morning, in the place of Ota,
they placed on you the crown,
woven in gold and in silver,
according to (worthy of) your person,
after this pistol-shot
which in Corsica resounds.

"Arrived at her Father's
she dressed herself as a great warrior,
loaded with iron and lead,
with the cartouche-box and the tarsette,
the stylet and the pistol,
saying: To-day it is my secret.

"She had the heart of a lion,
of a tigress suckling.
She extended the arm with the pistol,
and on his head discharged it,
saying: Soul unfaithful,
your death is prepared.

"Now! take me to Tallavo,
where are the banditti the proudest,
Giacomo and Santa Lucia,
those hearts brave and warlike,
and with them in companionship,
I will rove in the woods and paths."

According to a French prefect quoted by Gregorovius, whose Travels in Corsica I can recommend as a most fascinating book, 4300 assassinations occurred in Corsica between the years 1821 and 1852, in a population of two hundred and fifty thousand. In the last two years of this period the number was three hundred and nineteen. The peasant scarcely cultivated his field, for fear of being shot whilst at the plough, and his life was often passed in tracking or avoiding a foe. The women, bred up in a savage sense of honour, urged their husbands and sons to these deeds of bloodthirsty revenge, sang wild songs of triumph (*voceros*) over them if victorious, and equally wild songs of lamentation if they were killed.

Many Corsicans in those days spent years of their life barricaded in their houses, which they durst not leave for fear of their pursuers. The story is told of one man who remained fifteen years thus barricaded in his dwelling without leaving it. One day he heard that his antagonist was away, and ventured to go out and cross the road, only to fall dead on the other side, shot through the body by an enemy who had waited fifteen years for him! I

myself made the acquaintance at Isola Rossa of a gentleman, one of the leading proprietors of the island, who, a long while ago, actually lived for two years barricaded in the upper flat of a house in that town to avoid the "vendetta." An iron door on the staircase, through which he could shoot any one approaching, protected and separated him from his relentless foes.

How could a country prosper under such circumstances? The French Government never would take the chivalrous view of the Corsican vendetta, but declared from the first that a man shot under these circumstances was simply assassinated. If caught, he was tried, and either executed or sent to the galleys for life. This unpleasant mode of viewing the national point of honour in no way restrained the Corsican mind. They shot their enemies as before, and then retired to the mountains, where they could set the law at defiance, becoming banditti. At the commencement of the present century there were 1000 men in the mountains (*à la montagne*). The commandant of the gendarmerie at Ajaccio told me that in 1855 there were still three hundred.

These men were not brigands, such as we used to meet, and still meet, in Italy, in Calabria, and elsewhere. They were "honourable men," who had vindicated their sense of honour, in accordance with the immemorial custom of their race, and with the approbation of the large majority of their countrymen. Once in the mountains, out of reach of the authorities, in the primitive forests of the Monte d'Oro, the Monte Rotondo, the Monte Renoso, or the Monte Inchudine, they merely wished to live. They killed game, their friends and relations sent them supplies, the peasants and shepherds gave them food, and helped them to avoid their enemies, the soldiers and the gendarmes. Thus they led a kind of wild, Robin Hood life; seldom, if ever, attacking travellers, or doing harm to those who left them alone. I have been told that a traveller, not an enemy, might have gone among most of them with his pockets full of gold without fear. They would only have politely asked him for a small pecuniary contribution, if

they wanted it. Some few, however, were less honourable, less easily satisfied, even in those days, and could not have been thus trusted.

It was in vain that the French Government kept a regiment or two of soldiers in the island, and a large body of "moveable gendarmerie," accustomed to the mountains, and to mountain warfare. The vendetta was too deeply rooted in the minds of the Corsicans. The mountains were too inaccessible, and the population too favourable to these "honourable bandits," for them to be exterminated from the land. In the year 1854, therefore, very extreme measures were adopted; measures which seem very strange in our times as applied to a department of France, to the birthplace of the late imperial family.

Two laws were passed by the French Chambers. By the one, the entire population was disarmed, and it was made penal to carry firearms, or arms of any description, for any reason whatever, even including the pursuit of game; so that for many years there was no regular sporting in Corsica. A landed proprietor could not take out a gun and shoot a bird or a hare on his own property, without the permission of the prefect. When this permission was asked, and granted, it was given for one, two, or more days, for a special district, under the name of a *battue,* and police-agents or gendarmes were required to be present. All the higher and well-informed members of the community cheerfully acquiesced in the law, and surrendered their pleasure for the good of the community. This law was partially repealed in 1869.

By the other law, the *loi du recel,* or law of concealment, all persons harbouring or assisting outlaws became liable to imprisonment. This law has been stretched in practice in a very singular and Draconian but very effectual way. If a man kills an enemy, and flies to the mountain, the authorities instantly seize and imprison his relatives, and keep them in prison until he be caught or have surrendered. A very remarkable application of it occurred during my first visit at Ajaccio. A bandit who had killed twenty-seven people in his life, principally gendarmes, and had been out in the mountains above thirty years, had for some time

been lost sight of, and was supposed to have gone to Sardinia. He had recently reappeared, and had been seen in the vicinity of Sartene, in the southern part of the island. As many as sixty of his relations and descendants were immediately seized and imprisoned, and were only released when it became quite evident that the old offender had again withdrawn from the island.

Inhuman as this step may seem, it has been attended with the most beneficial results. These men of bronze, who killed an enemy as they would a noxious insect, whom no human or divine feeling could restrain from shedding blood, are fond fathers, sons, and brothers. They cannot bear to see their children, their fathers and mothers, brothers and sisters, permanently in prison, on their account. They either do not assassinate any longer, or they give themselves up to the authorities, and meet their punishment. There are now not more than two or three outlaws "*à la montagne.*" Were such a law passed and rigidly carried out in Italy, the country would soon be cleared of the banditti by which it is infested.

The rigid application of the *loi du recel* cuts at the root of one of the chief causes that tended to keep up banditism. So far from a peasant family being disgraced by one of their members being "out in the mountain," it was, in some sense, an advantage to them. From that moment the family had allies who protected and assisted them in their feuds and quarrels. They furnished provisions, powder, information, and, on the other hand, they received assistance and protection from their bandit relative and his companions. The imprisonment of his relations deprived the bandit of the all but indispensable assistance he was receiving, and transformed the members of his own family into very lukewarm sympathizers, if not absolute antagonists.

A singular feature in the history of these outlaws is their attachment to their native land. They could easily get to Sardinia, which is only separated by a strait a few miles across, or they could take refuge in Italy. But the love of their native country is too strong. They prefer to lie out for years in the forests and mountains, to be tracked

daily like wild beasts, without hope of pardon or of eventual escape, to taking refuge in another country.

A commandant of "gendarmerie," whose acquaintance I made at Ajaccio in 1862—a brave, open-hearted military man—had been ten years in the island, and they had been years of incessant warfare against the banditti. I heard many interesting details from him of the mountain warfare he had unceasingly waged—for such it is. He had several hundred men under him—all young, of great physical powers, and inured to hardships of every description. His attacks were principally made by night marches of twenty, thirty, or even forty miles, which enabled him to surprise his wary enemy.

I expressed my astonishment that he was still alive, that he had not been assassinated, Corsican fashion, after so often leading his men in such desperate work—for he said he had sent scores to the galleys and to the guillotine. He replied that the explanation was in the fact that he had always treated the banditti as fair antagonists. He had waged honourable war against them, and fought them openly, as he would have done a military enemy. He had surprised them, and exterminated them when he could, but never with the assistance of treachery, which he despised and repudiated. So thoroughly convinced, he added, were the bandits of his honour, that were he that evening to write and make an appointment with the most notorious of the few remaining, they would not for one moment hesitate to leave their retreat, and to come and meet him in Ajaccio itself.

One incident of the adventurous life of the worthy commandant deserves narration. He had been long pursuing a very desperate bandit, who had killed several persons, and had been in the mountain for many years, eluding all research. At last he heard that he was sleeping every night in a cavern, situated in a very wild and secluded district, high up in the mountains. By a night march he surrounded the cavern with a hundred and fifty men, and, certain of the outlaw's presence, summoned him to surrender. The only reply was a couple of shots, which killed one of his men. He then determined to smoke him

out, and commenced piling a heap of brushwood before the cavern; but before this could be half accomplished, two more of his men lay dead on the ground, shot through the body by his antagonist. Anxious not to sacrifice any more lives, the commandant determined to starve out the bandit, being aware that his stock of provisions and of water was limited. He therefore drew round the cavern, which had only one issue, a double cordon of men in the brushwood, and waited.

For two days and two nights was this tiger-watch continued. On the third night, towards morning, hunger and desperation prevailed, and the bandit made a sudden rush out of the cavern. Twenty guns were instantly levelled at him and fired, and he fell dead; but not before he had had time to single out and deal a death-shot to one more of his enemies. Thus the destruction of this man cost four valuable lives. This dramatic incident occurred only a few years ago.

It was easy to see that the worthy commandant entered thoroughly into the spirit of his arduous career; indeed that he enjoyed it. His eyes sparkled whilst he told me of the long night marches, of the ambuscades, of the surprises, and of the manœuvring, which form the main features of this mountain warfare. No doubt the excitement and uncertainty of this kind of campaigning has great charms for men fond of adventure.

The difficulty of seizing an outlaw who is supported by the warm sympathy of the entire population, and is assisted by them in every way, has been well illustrated recently in Ireland. In a quiet, civilized country, where there are no primeval forests, no mountains covered with eternal snow, an elderly assassin eluded the pursuit of the entire police force for two years, and at last died of disease. His whereabouts was constantly discovered, but owing to the connivance and assistance of the peasantry he as constantly eluded his pursuers.

The above facts appear to me sufficiently to account for the backward state of Corsica as regards its material development. It is the history of the Highlands of Scotland 200 years ago—a people constantly fighting either

against strangers or amongst themselves, and learning to look upon actual labour as derogatory. Such a social state is all the more easily accounted for when the material wants of life are few, the population sparse, the climate mild, and the soil so naturally fertile as to produce, all but without trouble, the actual necessaries of life.

At last, however, the very vigorous measures adopted by Government are beginning to tell thoroughly on the social condition of the entire community, and security reigns where diffidence and alarm formerly existed. There can be no doubt, therefore, that the natural resources of Corsica will speedily be developed. The forests of Corsica contain timber as valuable as that which is imported into Europe from countries thousands of miles away, its wines are good, abundant, and cheap; its mineral wealth is said to be great—lead, copper, and iron being found, I was told, in abundance, and with little labour. The island is now quite encircled and penetrated by good carriage roads, and regular and frequent steam communication exists between its principal ports—Bastia, Calvi, Ajaccio, and the French and Italian mainland. Capital and enterprise are alone wanted, and they are sure to make their appearance.

Were Corsica an English possession, a dozen companies would be at work in a few months, but commercial enterprise is slower in France. The French still look upon Corsica as a semi-barbarous country; the officials who hold appointments there consider themselves banished, and ever aspire after the time when they can return to France, to Paris. Scarcely any travellers, either French or others, ever visited the island, except on business, until my notice of it in the second edition of this work, in 1862, drew attention to its great natural beauties. So much was this the case, that the advent of myself and companions was a matter of surprise and curiosity. What could possibly have led us there, was the question. Indeed, to explain my presence, I was invested by the public with "a mission to examine the climate and productions of Corsica."

This isolation is, however, ceasing, and I am greatly gratified to think that I have been the means of sending

hundreds of my countrymen to this very beautiful island. In fact, in no part of Europe can a few weeks be spent more pleasantly in spring or autumn by the healthy tourist than in Corsica. In early autumn malaria is still too prevalent for pleasant and safe travelling; but by the end of October it becomes quite safe. It may, with the greatest ease, be visited on the way to Italy, or on the return from the north of Italy. There is a steamer every week between Nice and Bastia, crossing in twelve hours. Two or three steamers run weekly between Bastia and Leghorn, in six or eight hours, a short and generally a calm passage. A steamer runs weekly from Marseilles, to each of the larger ports—Bastia, Calvi, and Ajaccio, returning forty-eight hours after arrival.

The steamer, which leaves Nice every Wednesday evening for Bastia, returning on the Saturday evening following, renders the journey to Corsica a very easy one to all who winter on the Riviera. To the Italian tourist who wishes to deviate from the beaten route it offers an opportunity of seeing the glorious scenery of Corsica without loss of time.

Every Wednesday afternoon a large and commodious steamer for Tunis leaves Marseilles, reaching Ajaccio in twenty hours. From Ajaccio to Bastia there is a diligence daily, and a very good road, which passes over the mountain chains, and through most beautiful Alpine and forest scenery. At Bastia the steamer for Leghorn takes the traveller on to Genoa. Another diligence also leaves Ajaccio every morning for Bonifacio. When the Sardinian railroad, now under construction, is completed, and there is regular sea communication between Bonifacio and the Sardinian coast, the traveller for Rome and Naples may diminish the sea journey by more than half, besides seeing some of the most beautiful scenery in Europe. Cagliari, in the south of Sardinia, where the railroad terminates, is only a few hours by sea from Civita Vecchia, from Naples, and from Palermo, in Sicily.

To some classes of invalids, also, Corsica offers winter resources unknown before the publication of my Corsican researches. I was the first to point out, in 1862, that the exceptionally sheltered situation of Ajaccio, on the western

coast, renders it a suitable residence for invalids requiring a moister climate than that of the Genoese Riviera.

Ajaccio (population 14,000) is unquestionably one of the most lovely spots in Europe. It is one of the most smiling little French towns I have seen anywhere; not being cramped in by walls, it has spread itself out on the north-west side of a noble and picturesque bay, directed due south. At a distance of about twenty miles from the shores of this bay is seen a hemicircle of the majestic granite mountains, from six to nine thousand feet high, some of which, as we have seen, are capped with snow even in summer. The bay itself is as blue and as beautiful as that of Naples, although on a smaller scale; and the town is protected from the north-west by a spur descending to the sea from the principal range.

The vegetation of Ajaccio and the neighbourhood indicates a climate at least as warm as that of Cannes and Nice, perhaps even a shade warmer; the Olive, the Orange, the prickly Pear, thrive with great luxuriance. In the principal street there is a double row of good-sized Orange-trees planted out in the soil, the effect of which is charming. They were healthy and full of flower on my first visit at the latter end of April, and embalmed the air. I fear, however, that they are in a fair way to be destroyed by an asphalt pavement, which has been foolishly placed over their roots, for they were not flourishing when I last saw them. The Lemon tree grows also, and bears fruit out of doors, but only, as at Nice, in very sheltered and very protected spots. It is evident that there are no prevailing winds, such as are felt on other parts of the coast, for the trees on the shores of the bay, east, west, and north, and in the neighbourhood of the town, grow perfectly straight. In other coast regions, at Isola Rossa, for instance, the trees near the shore are turned north-east, indicating the prevalence of south-westerly winds. I have been told by nautical men that one of the features of the bay of Ajaccio is the absence of the strong winds that reign in the Mediterranean during the winter, but the testimony of those who have spent the winter there proves that violent and long continued winds often blow from the south-west, especially in March.

There is at Ajaccio a daily land and sea-breeze, which appears with the regularity of the tides in the Atlantic, and much facilitates the navigation of the bay. All the country boats, feluccas, and gondolas from the neighbouring districts go out to sea at night with the night breeze which descends from the mountains, and come in in the morning with the sea-breeze.

The principal medical practitioner of Ajaccio, Dr. Versini —a well-informed old gentleman of seventy-five, now dead—and his son, who has succeeded to his practice, assured me that the climate was a healthy one. The only epidemic disease they suffered from was malarious fever in the latter part of the summer and early autumn, and that not in a severe form. Its attacks occurred principally when the wind blew from the mouth of two rivers that empty themselves into the bay on its eastern shore. They told me that severe cold was unknown in the winter, and that the weather was generally fine and sunny. Their statement was confirmed by General Sebastiani, brother of the marshal, one of the few surviving companions of Napoleon, and a Corsican like him. The general had a residence at Ajaccio, and had spent the winter there for many years. He stated that he had tried nearly every famed winter climate in Europe, but had found none superior to that of Ajaccio, and had consequently adopted it as a winter residence. I found him full of life and vigour, notwithstanding his advanced age, and a very agreeable companion. He showed me over a large well laid-out garden, which climbs the hillside behind his residence, in the middle of the principal street. The general has had the good sense to plant it principally with the shrubs and plants of the country, which makes it exceedingly interesting. With the care given to them they are all thriving luxuriantly, and a stranger is thereby enabled to compare cultivated with wild nature.

Through the kindness of my friend Dr. Piccioni I was introduced to several families at Ajaccio, and their warm and cordial reception of me and of my companions, rendered our stay there additionally agreeable. I found everyone aware of the mild character of the winter climate of

Corsica, and anxious that it should become known to strangers.

There is a beautiful drive on each side of the bay, extending for some miles, which is being improved and extended. Several separate villas have been built and furnished above the commencement of this road for the accommodation of strangers, These villas are large, well distributed, and comfortable; they are furnished as well as they would be in Paris or in Nice, and are quite adapted to the requirements of a good-sized family. The rents are 4000 or 5000 francs, 160*l.* or 200*l.* for the winter season, according to the size. There is one, a perfect little palace, built by a late "receiver-general" for his own use, which was to let when I was there.

With the exception of the recently erected villas strangers will find as yet but little accommodation in the town. There are several hotels, neither very clean nor very good, but where travellers may manage to get on for a short time. Better hotels, however, are promised. The Hôtel de France is the pleasantest, from its looking out on a fine square, or place, near the sea.

Between my first and last visits to Ajaccio, a period of six years, I found that evident improvement had taken place in many respects, and I do not question but that eventually the wants and requirements of northern invalids will be so provided for as to render Ajaccio a safe and pleasant winter residence for those who require a moister atmosphere than that of the north shore of the Mediterranean. All islands must be, and are, moister than the mainland, and Corsica is no exception to the rule, for every wind that blows comes over the sea. It is this feature, however, mild moisture, that constitutes the peculiarity of the Corsican climate, the peculiarity which renders it suitable to some forms of disease. In Ajaccio, I believe, we find, to a certain extent, the mildness and moisture of Algiers without having to cross the entire width of the Mediterranean to reach it.

The year before the war, 1868–9, there were a considerable number of English and Germans at Ajaccio, and the accounts I received were very variable, and difficult to con-

ciliate. It strikes me, however, that there was the general feeling of dissatisfaction with the accommodation and supplies, which is usual in a young colony, and which time will modify, as the resources of the place are improved. It was so at Mentone during the early years of my residence there; complaints about food and accommodation were loud and numerous. I am also of opinion that some of the dissatisfied members of the community ought never to have gone there at all. They went, on their own responsibility, to a mild, rather moist and relaxing climate, when they should have gone to a mild, dry, bracing climate, such as that of the Riviera or of the east coast of Spain. Several medical friends have passed the winter at Ajaccio. One, a few winters ago, was quite satisfied, and spoke in warm praise of the climate. Another at first thought and stated that he had found the pearl of pearls, the real Eldorado, but he has since then repudiated his previously published opinions. Dr. Pietra Santa, one of the private physicians of the late French Emperor, was sent to Ajaccio in January, 1863, subsequently to the publication of my work, to investigate scientifically its climate, and has written an account, founded on a four months' residence, altogether favourable.

Dr. Bierman, an intelligent German physician, now practising at San Remo, who had settled at Ajaccio before the war, and who ministered several winters to the health of his countrymen, states that he was quite satisfied with his winter experience, that the climate more than answered his expectations, and that his countrymen did very well. Germans, as a rule, are much more easily satisfied as regards the comforts and elegancies of life than the English. Thus, they probably contrived to be comfortable and happy, although the English standard of comfort, and the expenditure it entails, had not been reached. When the new hotel now in contemplation has been erected, which I am told will soon be the case, and the expenses of living have increased in proportion to the advantages gained, as they always do, our countrymen will probably be more contented.

The war between France and Germany arrested the advent of German invalids, who were beginning to adopt

Ajaccio as a winter residence in yearly increasing numbers, and they have not returned. Indeed the war proved a great check to the budding prosperity of Ajaccio—a check, however, from which it is rapidly recovering. Many improvements have been made within the last two or three years. New houses have been built, good water has been brought to the town, and a handsome boulevard has been made along the sea shore. Several members of the English community have bought land in the vicinity of the town, and, on the whole, an era of progress and prosperity appears to have commenced.

In conclusion, I would advise no invalid who peruses these pages to fix his winter abode at Ajaccio without placing the above facts before some trustworthy physician. I would also advise no one to winter there as yet until better hotels have been established, and better fare be attainable, who is really very ill, who requires great comforts and very choice food, or who has never travelled on the Continent, and is totally unaccustomed to continental habits and diet. Those who do go must still look upon themselves as pioneers of progress, helping to open out and clear up a partially-known country for the benefit of those who follow as well as for their own. All such pioneers run a little risk, and in that very risk, generally speaking, lies the chief charm.

At Ajaccio there is a nucleus of very good society, both Corsican and French. There are the préfet, the judges and magistrates, the officers of the garrison, the leading engineers, and the resident native families. All appeared to be most amicably and cordially disposed to strangers. To crown the whole, there is a very tolerable Italian opera company throughout the winter season, and the subscription for one of the best boxes, holding six, is only about ten pounds.

A great and mysterious charm about this little southern town is its having been the birthplace of Napoleon. It was here that he spent his childhood and his early youth, until, at the age of fifteen, he entered the Military School of Brienne. As I have stated, he returned yearly to Ajaccio to pass the vacations in the

bosom of his family, and was mixed up with all their feuds and Corsican feelings until fairly launched in his great military career. Then leisure ceased for the great man. His mind was ever full of ambitious and grandiose plans, his time and thoughts ever engrossed by their fulfilment. His quiet little native town and his Corsican nationality passed into the background, only to be fully remembered when chained to another island—the ocean rock of St. Helena. His family followed his wonderful fortunes—his brothers to become kings, his sisters to marry princes.

Our first visit the day after we arrived at Ajaccio was to the house of the Napoleon family, in which the hero was born. It is a good-sized, comfortable house, situated in the very centre of the town, looking out on a small court or garden, and so surrounded by taller houses that there is no view of the sea or mountains from the windows. Its size and position show what we know to be the case—that Napoleon's parents must have belonged to one of the leading families of Ajaccio. The house has been renovated by the late emperor, the old family furniture has been sought out and brought back, and everything has been replaced as much as possible in the same position as when the rooms were occupied by the Bonapartes in former days. Thus every article of furniture and decoration is a souvenir. The bed in which Napoleon was born is seen in a room on the ground-floor, as also the room and bed he occupied during vacation visits to his home when grown up. The house was shown to us by an old female servant of the family, who knew and attended Madame Letitia, Napoleon's mother, up to the time of her death.

There is an old and rather handsome church, called the cathedral, very near the family mansion, which no doubt is exactly in the same state as when he was daily taken to it as a child by Madame Letitia. I was at Ajaccio on the 5th of May, the anniversary of Napoleon's death, and attended a mass given to his memory, at which all the notabilities of the place were present. As I sat listening to the solemn strains of the organ, I could not help fancy-

ing I saw the future emperor as a child, kneeling at his mother's side, in the very place where he, no doubt, had really knelt hundreds of times. All was changed, all were gone who then lived, but the old church remained as in former days.

Ajaccio is full of the memory of Napoleon. While sauntering through its quiet, sunny streets, with the beautiful bay and mountains generally in view, I could not help thinking that for years his steps had trodden the same ground, as a wild, impulsive child, and as a restless, ambitious youth. The contemplation of the grand natural beauties that surrounded him, and the constant brooding over the history and misfortunes of his native country, no doubt contributed to build up the rugged, indomitable character that he afterwards showed.

The late emperor, and especially his cousin Louis Napoleon, had strong Corsican sympathies. The latter has an estate near Calvi, which he frequently visits for shooting. Under their auspices, the town of Ajaccio is beginning to show that it really is the birthplace of the present imperial dynasty. A very chaste and beautiful marble chapel has been built as the mausoleum of several members of the imperial family. A museum and picture gallery has also been erected, and is a fine monumental building. In it I saw, carefully arranged, a large gallery of paintings left to Ajaccio by Cardinal Fesch, which had long been stowed away in lumber rooms. Some few are good, but the greater number are very second rate.

The names of the streets and squares are essentially Napoleonic, being mostly derived from some member of the imperial family. In the market-place, behind a handsome stone fountain, is an allegorical statue, said to be meant for Napoleon. One side of this market-place, which looks on the bay or gulf, is bounded by a solid granite quay, that enables small vessels to moor close to land. This market-place is flanked by tall, well-built houses on one side, and by the town-hall on the other—a very respectable structure. On each side is a double row of handsome plane trees. The view of the blue bay, with its hemicircle of grand mountains in the distance, is in-

describably beautiful from this point. This magnificent bay is protected from all winds but the south-west, and in its western or upper region there is a mole or jetty which gives the requisite protection even against this wind. More important works are in contemplation, and Ajaccio is to be made, ere long, one of the finest and most sheltered ports in the Mediterranean. A jetty is about to be thrown out from a rocky point projecting into the bay, that will protect the anchorage, now exposed to a heavy swell from the south-west.

In the Grande Place, facing the sea, has been placed a fine equestrian statue of the first Emperor Napoleon, surrounded by those of the "four kings," his brothers. These statues were erected by a national subscription, and were inaugurated by Prince Napoleon a few days after one of my visits to Ajaccio (1865). I much regretted not being able to remain for the ceremony.

Ajaccio is the only town of Corsica that appeared to me thoroughly eligible as a winter residence. Perhaps I might except Bastia, but I do not think Bastia is without objections. The climate is evidently exceptionally warm, for the valleys of Cape Corso in the immediate vicinity of the town contain Orange and Lemon trees, the hill sides are covered with large Olive trees, and Lycopodium grows in all moist situations. But Bastia must be exposed, from its situation, both to south-east and north-east winds. Even the south-west wind blows with great fury at times during the winter, passing over the mountain ridge that separates Bastia from the Gulf of San Fiorenzo, 1500 feet high, and falling on the eastern side with such violence as to cut off the heads of cereals, to carry off the roofs of houses, and to confine the inhabitants of the town to their houses. Then there is a small, tideless port, which is so closed in that the water becomes nearly putrid, and no part of the town in its vicinity would be eligible.

There is, however, a row of new, handsome houses on the principal "Place," facing the sea, which would constitute a very eligible residence if accommodation in them could be obtained, which I doubt, as they are all occupied by the leading Bastia families. The view of the sea from these

houses is very beautiful, with the three mountain islands of Capraja, Elba, and Monte Cristo rising out of the waters at a distance. Other houses, however, are being built in the same locality. There is a small but clean and tolerably comfortable hotel—the Hôtel de l'Europe—on the Grande Place, which is without question the best in Bastia.

Bastia is the most thriving, populous, and commercial town in Corsica. A considerable amount of shipping yearly enters and leaves its port, and there is more enterprise and activity shown by its inhabitants than by those of any other part of the island. This is explained by its proximity to Italy, with which Corsica has always been intimately connected, and also by the fact that Bastia is the port for an extensive range of fertile country, and for the greater part of the eastern division of the island. Ajaccio has scarcely any commerce, and is only the natural outlet of one or two of the valleys comprised between the spurs or western buttresses of the central granite range. Bastia must, therefore, ever be the principal commercial port of Corsica, and Ajaccio, although the government capital and capable of being made a magnificent harbour, will always occupy, commercially, a second-rate position.

The drive along the road at the foot of the Cape Corso mountain, which extends from Bastia quite round the cape, is very lovely. On one side the blue Mediterranean, on the other the mountain, the gentle slopes of which are covered with Olive trees. Every few miles a ravine opens out, and in the upper part of this ravine, luxuriantly fertile, is always seen a village, enlivening the sides of the mountain with its church and its white houses grouped in picturesque disorder. Each of these villages has its marina, or little port, on the shore. About six miles from Bastia, on this road, is one of the most interesting limestone stalactite caverns in existence—that of Brando. It may be recommended to visitors as an agreeable excursion.

The mountain of Cape Corso and its ravines have a great local reputation for their wines. My friends at Bastia repeatedly excited my envy by the choice specimens of these unknown wines that they offered me. Of late years but little has been made, owing to the ravages of the

oïdium, which the Corsicans were long unable to conquer. But new Vines are now being extensively planted everywhere throughout Corsica, to replace those that have been destroyed by disease, so that in a few years large quantities of good wine will be again made, both in the Cape Corso region and in others.

In the southern regions of Corsica the oïdium is still unknown, and perhaps the best wine of Corsica is still produced there in considerable quantity, the Vin de Tallano. This wine is made in the vicinity of Sartene, the best by M. Giacomoni, at St^{a}. Lucia di Tallano, and is really good. It resembles a full-bodied Burgundy, although it has a peculiar rich flavour of its own, has a great reputation in Corsica, and was much drunk by the first Napoleon and by his family.

On the north-eastern extremity of Cape Corso a valley opens out, rather wider and more fertile than those previously passed. Through this valley a road has recently been carried over the mountains, at an elevation of 2000 feet, which, descending on the western side of the Cape, soon reaches the village of Pino, the native place of my friend M. Piccioni. We started from Bastia one forenoon, and by dinner-time reached his ancestral domain, an old square fortified castle. In this castle his progenitors have lived for above 400 years. The next day was devoted to wandering about the picturesque old village perched a thousand feet above the sea, which lay smiling at our feet in one of its placid moods, merely fringing the rocks, the precipitous coves, inlets and bays with a thin margin of white foam. Wherever we went I saw evidence of an enlightened impulse, given by a master mind—evidence that the enthusiastic and patriotic feelings of my friend were a reality, that an oft-repeated quotation of his from Metastasio—

"Ad ogni cuore ben nato quanto la patria è cara,"

was with him a true heartfelt sentiment. Roads had been made, houses erected, the mountain side covered with new plantations; in a word, there was progress on every side. One of the visits I made with my friend was one that I

shall not easily forget. It was to the Roman Catholic priest, who, said M. Piccioni, was a true Christian, a great friend and ally of his in all good works, and in all attempts to improve the intellectual, moral, and social state of the surrounding villagers.

We found the priest a tall, intelligent, fresh-looking, gentlemanly man of about forty, with a kind, good-natured, simple expression of countenance. He was in the garden of a little square stone house that had been recently erected for him in a most picturesque situation. I never saw a man more pleased with a new residence. He showed us his vegetables and his flowers, and all the simple, naked rooms of his presbytery, which he clearly thought a palace. We had to sit down opposite each window to admire the view, the effects of rock, mountain, sea, and clouds, to all of which he very particularly drew our attention. Then we were invited to partake of some refreshment, and had to drink wine he had made from his own vintage and to eat bread made from corn grown on the mountain side. We talked firstly about the schools, and the sick poor, respecting whom my friend inquired. By degrees the conversation glided on to Seneca's Tower, which is just above the village of Pino, and from that into old classical times. I soon found that he was a sound classic, had read and re-read all the Latin poets and historians, and was indeed much more familiar with classical literature than we were. He had been educated in a seminary in the island, had never been out of it, and would probably live and die a poor village priest, in an out-of-the-way hamlet at the extremity of Cape Corso, far from the world and its vanities. But he was happy, quite happy, he said, with his modest duties, his library, his old classical friends, his musings on human nature, the same from age to age, and his little garden and glebe. I was sorry to leave him at last. M. Piccioni told me that there were very many such as he throughout the length and breadth of Corsica, good and true men, intellectual as well as pious, living thus in the present and the past, and humbly doing their duty. I myself have met others in Corsica, in very out-of-the-way places, of the same type, truly good men—men to be respected—for when faithful and true, do not such men

really sacrifice all earthly affections and ambitions to their ministry?

The solitary tower to which tradition gives the name of Seneca's Tower is nearly at the summit of the mountain above Pino. This Roman philosopher, subsequently the master of the infamous Nero, was exiled to Corsica by Claudius, and passed eight years in the island. Seneca, although a stoic, did not bear his punishment with fortitude. He has left records of his sojourn in Corsica in the shape of anathemas against the "wild and barbarous land" to which he was exiled, and of fawning supplications to his imperial master to restore him to favour. He seems to have had little power of appreciating the splendid scenery and the beautiful climate in which he passed these years of exile. His thoughts were ever on the blandishments of imperial Rome, to which he eventually returned, to become the master of Nero. There the stoic became a court favourite, and amassed a large fortune in a few years. Then he had not only to surrender his newly-acquired riches, but life, to his tiger pupil. He had better have remained an exile even in the lonely Pino tower, in abhorred Corsica.

There is at Bastia—an important fact for travellers—a thoroughly well-informed and experienced medical practitioner, Dr. Manfredi, the surgeon of the civil hospital. He is a skilful operator, and occupies a leading position as such in Corsica. The all but uniform success that, according to my surgical informants, attends surgical practice at Bastia and elsewhere, speaks greatly for the general healthiness of the climate, as well as for their skill.

Dr. Manfredi was educated in Paris, and has now been practising as an operating surgeon in Corsica for more than thirty years. The difference between surgery in Paris and surgery in Corsica was, he told me, perfectly marvellous. Nearly all surgical wounds heal at once by first intention, and purulent absorption is all but unknown. He has had many cases of lithotomy, and has been successful in all. Indeed, he said he had such reliance on surgical cases doing well, that there was no operation in surgery that he should hesitate to attempt. On hearing this state-

ment, I concluded that it is all but worth while to go to Corsica expressly to be operated on, in case of dire need.

About thirty miles south of Bastia, in the midst of the Castagniccia, or Chestnut country, in the centre of a highland region formed by spurs of the limestone chain of mountains, is a mineral spring called Orezza, the waters of which are renowned all over Europe. It is a strong chalybeate, loaded with carbonic acid. This spring is of inestimable value in a country like Corsica, in which the principal disease the inhabitants have to contend with is "malaria fever," or intermittent fever, in its more aggravated forms. The spring is leased to the Vichy Company, who have recently built an hotel and a regular bath establishment. A few hundred feet above the principal spring is another, which combines iron and sulphur, and is very valuable in chronic cutaneous diseases.

Dr. Manfredi kindly took me with him to visit the springs and this part of the island, and our excursion proved most interesting. The village of Orezza, or the greater part of it, is the doctor's patrimonial estate, and he possesses there a manorial fortified house, which I inhabited during our stay, and which I examined with much interest. The outer walls are of great thickness, composed of massive stones simply superposed, and they bear the trace of the strife of past days, bullet marks and smoke. During the hundreds of years that it has been inhabited by the ancestors of Dr. Manfredi, it has many times been attacked and besieged, and repeated but vain attempts have been made to destroy it by fire. The village is situated 2000 feet above the sea, and 500 above the mineral spring. From the terrace before Dr. Manfredi's house, I counted twenty villages perched on the summit of as many hills, all in situations capable of being defended.

Orezza is one of the regions that was never conquered by Corsica's foreign foes. Surrounded by mountains in every direction, the sides of which are covered with magnificent and very productive Chestnut trees, it has always maintained a numerous warlike, patriotic, freedom-loving, and very idle population, delighting in the noble art of war. It is a part of the Terra del Comune of the Corsican

historians. It was by the sons of this district, principally, that the last battles for freedom were fought against the Genoese, and latterly, against their allies, the French.

The priest, or curé, and the mayor of the village dined with us. I was charmed by their simple cordial manner, and surprised by their knowledge of the political history of Europe, and by the great interest they took in everything that was English. This, I found from my host, was explained by the incidents that occurred at the close of the last century. As I have already stated, during the last struggle of the Corsicans, under their glorious chieftain Paoli, from 1794 to 1796, they had the warm sympathy and partial assistance of England. Hence, in this region, the last to succumb to French rule, then considered a foreign tyranny, there still lingers a grateful remembrance of England, and of the support she gave them in their extremity, although that support was scanty and inefficient. England had then many foes to contend with, and other duties; so that, although the nation enthusiastically responded to the call of the heroic Corsicans, but little active aid could be given. Several members of my host's family long remained in the English service, in the Corsican Rangers, after the annexation of their country to France had taken place.

The mineral spring issues in great abundance from a circular well in the centre of an open building on a small mountain terrace, planted with trees as a promenade. It sparkles like champagne on reaching the surface, and is pleasant to the taste. A number of men and women were bottling it, and packing the bottles in cases for exportation to the Continent, where there is a large sale. This chalybeate, Dr. Manfredi told me, combined with the pure mountain air, is a perfect panacea for the anæmic condition which accompanies and follows severe attacks of intermittent fever. Thus, said he, Providence has placed the antidote near the disease. It is also most valuable in cases of chlorosis, or debility from whatever cause.

Many of the upper classes from Bastia and the north-east of Corsica pass the hot summer months here; partly to take the waters of Orezza on health grounds, and partly

to escape the great heat of the shore region. They locate themselves, in a primitive fashion, at the houses of the wealthier peasants in the numerous mountain villages. At an elevation of 2000 feet the nights are always cool, and the days, although warm, are said to pass pleasantly under the cool shade of the Chestnut trees. To those of our countrymen who wish to spend the summer in Italy, I think the mountain retreat of Orezza might offer a valuable resource, although I consider the summer heat still too great for consumptive or debilitated patients.

In these mountain villages they would find simple but comfortable accommodation. I myself visited several of the houses where "lodgings" are let in the summer, and was surprised to find how neat and clean and comfortable they were. The months of May and June might, at least, be profitably spent at the Orezza springs by those who wish to combine mountain air with a course of chalybeate waters before returning to the north. Several of my friends and patients have done so, and have been delighted with their "month in the mountains," with the beauty of the scenery, with the cordial simplicity of the mountaineers, and with the results of the mineral water treatment.

Awaking early the morning after my arrival at Dr. Manfredi's hospitable mountain home, and looking out, I saw a crowd of peasant men and women, dressed in their Sunday best, perambulating the terrace beneath the window. On inquiring of a member of my host's family the meaning of the assemblage, I was told that they were peasants who had heard of the doctor's arrival, and were come to consult him! When he came in for breakfast, I found that he had been busy from six o'clock ministering to their wants; "a few words of advice or consolation," he said, "was all they required. Although anxious and delighted to be of use, the extreme confidence of his fellow countrymen was," he said, "a sad hardship. As soon as his arrival at Orezza became known, they always flocked in from the surrounding villages in such numbers as positively to besiege the house, and to drive him back to Bastia in despair." The key, however, to this friendly persecution, was evi-

dently the kind philanthropic spirit and the great local reputation of Dr. Manfredi.

As we returned home we were repeatedly stopped by "patients" waiting for us on the roadside, enamelled with purple Cyclamen and white Asphodel. They had heard that the doctor had been seen on his way to Orezza, and were waiting his return. One case I well recollect. A poor, thin, pale-faced young man was sitting on a chair, at the roadside, with several relatives around him; signs were made to us to stop, and the case was forthwith investigated. The patient held up to our notice a knee swollen to three or four times its natural size, and bearing the evidence of woful disorganization in the joint. Dr. Manfredi shook his head, and said to him, "My poor friend, all treatment would be unavailing; to save your life the limb must come off. Come to my hospital, and you shall have a bed." The poor fellow's white lips quivered, and he merely answered, "I will come." We then ascended our light carriage, and left him sitting on his chair in the road, and surrounded by his sympathizing relatives. I heard later that he did enter the hospital, had his leg amputated, and is now a healthy young man, although a cripple. Throughout this journey I felt that my friend's position and mission in remote Corsica was a very glorious one—one that bore with it its own reward, and made up for many of the anxieties and heartaches that are inseparable from our arduous career.

We stopped to breakfast at a roadside inn, where we were very cordially received, more as friends than as paying guests. Here we had more patients to see, both before and after our repast. As we were sitting down, a thin, wild-looking, dark-complexioned man, of about thirty-five, came in, and was introduced to me as a brother practitioner. I afterwards learnt that he was a member of some Italian medical college, and that he practised in the neighbouring villages. His coat was old and threadbare, his shirt had not been changed for many days, and his hands spoke not of daily ablutions; and yet there was something in him that bespoke a refined, cultivated, intellectual nature.

Whilst Dr. Manfredi was seeing his patients, my new acquaintance and I sat down on a log on the roadside, and discoursed of many things. I found his medical ideas often wild and visionary in theory, but practically he appeared to have gained considerable experience of disease. Then he revealed himself to me as a poet, frantically fond of Corsica, his native country, and full of patriotic and poetic fancies about its mountains, its valleys, its climate, and the highlanders, his countrymen. Half an hour passed rapidly, and I was sorry to take leave of the wild, poetic, Corsican village doctor.

I have often thought of him since, so full of mental refinement, of classical and poetical conceits, and yet spending his days and nights for a bare maintenance in ministering to the poor ignorant peasants around him. I have seen some charming little poems written by him, full of sentiment and pathos. Perhaps, however, he is happier surrounded by the majestic scenery of his native country, which he can so well appreciate, and in possession of the affection and confidence of his simple patients, than many a great city doctor in other countries.

On our route to and from Bastia, we passed along the salt-water pond of Biguglia, through one of the most malarious regions. At that time, the latter end of April, there was no malaria whatever. The country was covered with grass and green crops; it looked, indeed, so smiling and pretty, so much like flat healthy meadow land in England, that it was really difficult to believe that this very region could be one of the pestilential spots from which every one flies in autumn. And yet such is the case; even a passing traveller might all but have guessed that the country was insalubrious, from the complete absence of farms and villages.

On the mountain side, however, to the west, away from the shore, were numerous villages, all at an elevation of one thousand or fifteen hundred feet above the sea-level. They were thus invariably built, I was told, to secure the inhabitants from malaria. The owners of the alluvial shore-plains who reside in them, descend in the morning to cultivate the soil, and then return at night.

The principal agricultural operations on the eastern coast, from Bastia to Bonifacio, are carried on by an emigration of Lucchese from the Continent. They arrive in November, till the soil during the winter months, when malaria is dormant, and return to their own mountains in April. They reach their native villages with a few pounds in their pocket, the result of the winter's labour, but also often with the seeds of fatal disease. The crops are reaped in June, and then the malarious plains are deserted, left to nature, until the cold weather of autumn has rendered them safe, or at least partly so. The Corsican summer sun is so fierce, that wherever water stagnates, even when deep in the soil and not perceptible to the eye, it appears to produce malaria. The change from intense heat in the day to damp coolness in the night in these districts is constantly attended with the generation of fever.

More to the south there are plains such as those of Aleria, a Roman colony and town in former days, which are even more deadly than that of Biguglia.

Although Corte is in the middle of the mountains, fifteen hundred feet above the level of the sea, and merely traversed by a brawling mountain torrent, I found that malaria fever was rife there. Dr. Tedeschi, the leading medical practitioner at Corte, told me that he thought the fever was constantly developed at Corte and in Corsica generally, in summer and autumn, by a mere chill, quite independently of any malarious influence. Every year he was called to attend very severe cases, brought on by chills experienced from merely sitting out in the evening under the shade of a row of plane trees, in the centre of the town or elsewhere, away from all water. I found the same opinion prevalent among the medical men both of Bastia and Ajaccio.

The experience of the Corsican medical practitioners thus appears to corroborate the views entertained by a much valued friend, the late Dr. Robert Dundas, and brought before the profession in his interesting work, entitled "Sketches of Brazil" (1852). Dr. Dundas proves to demonstration, by numerous facts derived from his lengthened experience of intermittent fever in the Brazils and in other tropical

climates, that the purest and most wholesome sea-breeze will often give rise to severe intermittent fevers, when those exposed to it are debilitated by heat, by previous illness, or by bodily and mental exhaustion, or are in a state of perspiration from severe exertion. At Bahia the most malarious houses are not those that are exposed to winds coming from the neighbouring marshes, but those that are the best situated according to English ideas, that are exposed, without protection, to a pure, but moist sea-breeze. Chill would be the cause of fever according to this view.

Again, Dr. Rennie, in an interesting work, entitled "The British Arms in North China and Japan," says "that soldiers residing in malarious localities and in low situations, often did not appear to suffer, but when removed to the heights, and freely exposed to the breeze, they were struck down with fevers." These and similar cases occurring again and again, led Dr. Rennie to conclude that the low situations produced a debilitating effect and a predisposition to fever which attacked the weakened men directly they were exposed to currents of air. Thus what would have been found invigorating to persons in health could not be endured by these men owing to their weakened state, from the intense heat of summer.

Most of the malarious regions in Corsica are on or near the sea-shore, and as there is in summer a very decided sea-breeze during the day, its chilling influence may be an important cause of fever; the predisposing cause being previous exposure to intense heat.

The Corsican medical practitioners, although thus admitting that a chill will produce ague in their climate, apart from the influence of marsh air, give the latter full weight as a cause of fever. It would be difficult to do otherwise in a country like Corsica, for the fever is the most severe and the most deadly where the marshes are the most extensive, as on the eastern coast; whereas it all but disappears wherever full and efficient drainage is carried out. Several regions were pointed out to me, such as San Fiorenzo and Calvi, formerly decimated by fever, and now comparatively healthy, through the drainage of neighbouring marshes.

In our country a chill in summer does not produce ague, but bronchitis, pleurisy, rheumatism, or diarrhœa, but then the human economy has not been previously exposed to intense tropical heat. Still, our marshy, undrained districts, such as the fens of Lincolnshire, are malarious, like the marshes of Corsica, intermittent fever appearing in autumn, apparently without previous tropical heat or exposure to recognisable chills.

Corte is historically interesting for, not being exposed to attack, like the shore towns in olden times, it became the patriotic capital of Corsica; it appeared to me, however, one of the least picturesque towns that I saw. The principal sight is an old historical castle worth visiting. On one of my visits to this castle it was tenanted by four hundred Arab prisoners, taken in war in Algeria, by the French, and therein confined. It was sad to see these children of the desert with their fierce black eyes and swarthy complexions, wrapped up in their bournous or mantles, walking or lying listlessly about the courtyards, dreaming no doubt of liberty, of the sunburnt land of their fathers. Many were leaning over the ramparts, looking steadfastly at the distant mountains, probably in imagination scaling their fastnesses in freedom. Some followed our movements wistfully with the eye, wherever we went, no doubt envying our power of egress. It made my heart ache to look at them, and I was glad to leave the castle. Prisoners in wild. free Corsica seemed an anachronism, a sad blot on the land. The poor Arabs had to remain cooped up in this mountain castle one long dreary year more, and then they were liberated, on the occasion of the French Emperor's visit to Algeria.

In the neighbourhood of Corte, at Ponte Leccia, are some copper mines. The proprietors told me that the mines were getting into good working order, and would certainly prove a valuable speculation. Indeed, Corsica offers a wide field near home to the speculative; its mines, its marble quarries, its forests, and its vineyards are, no doubt, capable of being worked with advantage.

Isola Rossa, or Ile Rousse, is a small modern town, founded by Paoli in the latter part of last century, with a

good port, and weekly steam communication with Marseilles. The coast and country are picturesque, but there is no accommodation for strangers, except the little inn. Moreover, the south-westerly winds must be trying, if we may judge by the inclined trunks of the trees on the shore. The beans and rye were ripe on the 25th of April, and the planes were in full leaf. There is one handsome modern house, like a quadrangular castle of the olden time, belonging to M. Piccioni, the brother of my friend at Bastia, from whom, too, I received great attention.

Calvi is an old seaport, further south, for centuries occupied by the Genoese, to whom it ever remained faithful; its motto, "Semper Fidelis," may be still seen on the gate. It occupies a high promontory, which forms one side of a very fine and tolerably safe bay. The upper part of the town is a mass of ruins, and has been so ever since it was bombarded in 1794 by Nelson, who there lost an eye. It is quite singular to walk through the streets among the falling walls of houses, some merely shattered, some partly burnt, as if by a bombardment of yesterday only. Below these shell-and-cannon devastated houses are those occupied by the modern town.

Across the small bay is a semicircular plain, a few miles only in depth, and bounded by a semicircle of glorious snow-capped granite mountains. The view from the ramparts of Calvi is perfectly magnificent. From the sides of these mountains run several torrents or rivers, which have, as usual, converted the alluvial plain into a fever-breeding district; hence the extreme unhealthiness of Calvi in the past. The drainage and cultivation of some of these marshes have much improved its sanitary condition. The plain is covered with the ever-present maquis, Myrtle, Cystus, Heath, Arbutus, and Lentiscus, and looks as innocent as possible. To render it really so, the torrents would have to be embanked, and the soil drained and cultivated. Wherever this is done malaria all but disappears, even in Corsica. M. Piccioni, of Isola Rossa, has purchased a considerable tract of this land, and is clearing, draining, and cultivating it, as a lesson to his fellow-countrymen at Calvi. The land thus brought into cultivation is turning out most

productive, and this philanthropic lesson will eventually prove a profitable investment.

One of the objects of my visit to Corsica, as elsewhere stated, was to find a perfectly cool summer station for the English consumptive invalids who wish to pass the summer abroad. I found stations such as Orezza, and the baths of Guagno, near Ajaccio, which would do very well for healthy persons, anxious to escape from the extreme heat of southern Europe during the summer months. But these localities are not sufficiently high and cool to be chosen as summer retreats by invalids. The latter, as previously explained, ought, if possible, to keep in a dry, cool temperature, between 60° and 70° Fah. The Corsicans do not feel the want of such a summer temperature, and have consequently made no effort to find it.

On crossing the granite chain on the way from Corte to Ajaccio, we came to a spot between Vivario and Bocognano, called Foci, the most elevated that is passed, which would no doubt do admirably for such a summer sanitarium. We were quite four thousand feet high, and had left the maritime Pines and the Chestnuts far below; the trees had become English trees—Beech, Birch, and Larch. The air was cool and pleasant, the sky clear, the mountains very beautiful; but there was only a small, dirty, roadside inn. No doubt the Ajaccians would shudder at the idea of spending their summer in such a locality, and yet it is admirably situated for a cool mountain hotel, or sanitarium, such as abound in Switzerland.

Nothing would be more enjoyable than to pass two or three months in midsummer, in the pure mountain atmosphere of such a spot, in the very midst of the primeval forest. The Larches line the sides of the all but perpendicular mountains around, climbing in serried ranks towards the sky, until they reach the snow line. The Beeches in the valleys and ravines are growing as luxuriantly as in our own country, and form a glorious shade from the still ardent sun. The moss-covered ground is enamelled with wild flowers, and the entire scene is enlivened by brawling torrents and streamlets of pure crystal water, dashing over the rocks in their impetuous descent to the plains.

I have twice crossed this glorious mountain pass, and each time the irrational impulse has been strong upon me to let the carriage go on alone, and to take my chance in the wilds of these Corsican mountains.

The inhabitants of the more southern regions of continental Europe do not seem to possess, in the slightest degree, the roving, adventurous spirit of our countrymen. They do not understand our love for the picturesque, our readiness to undergo any amount of privation and fatigue in the endeavour to find it. I well remember one of the most accomplished, cultivated, and refined Italian noblemen I have met with saying to me "that he could not comprehend the English going up a mountain merely to come down again. It appeared to him all but an act of insanity. He was ready to undergo any amount of fatigue or exertion for a geological or botanical purpose, but as to exhausting himself as we did, merely to look round him from the top of a mountain at naked rocks and arid stones, he could not do it, and did not understand its being done."

Hence the higher classes in these countries are rarely found away from home, except in cities or in watering places, where they congregate for a tangible purpose, health and society. As a necessary result, in the wildest, most retired, and at the same time the most beautiful regions, there is often no kind of accommodation; for none but peasants or roving Englishmen visit them.

It is worthy of remark that a love of, and an enthusiastic appreciation of the picturesque in nature is a result of education and of refinement; I might add, of modern refinement. It is very seldom met with in the uneducated, who generally seem to live in the midst of the most beautiful scenery without its making the least impression upon them; they gaze on it like sheep, stolidly. I have been struck, also, in reading poets and writers even of the last century, by the very different manner in which they appear to appreciate scenery as compared with the appreciations of modern writers. In their eyes a heather covered common is wild, bleak, melancholy; a jagged precipitous mountain is sombre, desolate, threatening. Now-a-days the ideas

raised in the mind of an admirer of nature by the same scenes would be exactly the reverse.

The *routes forestières*, or forest roads, which have been and are being constructed, in order to open out the hitherto inaccessible primeval forests in the higher mountain regions, might be made the means of a very enjoyable tour. A light carriage, char-à-banc or waggon, could be chartered at Bastia, and equipped with supplies, as for a journey in South Africa, with hammocks and other gipsy equipments. Thus armed the wilderness might be encountered, and what with local resources, and the assistance of the village curés or priests, the Corsican highlands could be explored in every direction. Had I leisure I would certainly carry out this plan: the season should be April and May.

A long way down, on the western slope, we found a favourite hot-weather retreat, Bocognano. It is a Chestnut country village, like Orezza, and assuredly a very hot place, for we were half roasted in April, during the time we remained for breakfast. It is true the Chestnut trees were not yet in full leaf, and gave no shade.

The baths of Guagno, about twenty miles north-east of Ajaccio, are greatly renowned in Corsica. The waters are sulphurous, and much frequented in summer. It is to the fashionable world of Ajaccio what Orezza is to that of Bastia. Guagno is prettily situated, about three miles from Vico, in a "fold" of the mountain, amidst a forest of Chestnut trees, and is in the immediate vicinity of one of the largest and grandest of the primeval forests of Corsica, that of Aitone. Evisa, about fifteen miles beyond Vico, is the nearest point for the forest.

At Vico, the ladies of our party were most hospitably received by a Corsican gentleman and his family. A picnic excursion to the forest was proposed and accepted, and one of our companions, a young lady from Yorkshire, accustomed to follow the hounds and a perfect equestrian, greatly surprised the escort, composed of some score or two of Corsican gentlemen. Mounted on a strong mountain pony, dressed in a scarlet Garibaldi and an improvised habit, she valiantly took the lead, and kept it throughout

a ride of more than thirty miles, there and back, over hill and dale, up and down precipitous roads frightful to look at. Our brave and much admired young countrywoman returned, I am happy to say, in triumph, safe and sound. This is more than can be said of all her followers, for some awkward tumbles took place among them; but, fortunately, they were unattended with any serious consequences.

The road from Ajaccio to Vico is grandly beautiful. On leaving Ajaccio it climbs up the sides of one of the lateral granite spurs, to a height of 2200 feet, and then descends into a most lovely and picturesque valley, Liamone by name. It is shut in by the high forest-covered mountains to the east, by the blue sea to the west, and north and south by the granite buttresses, one of which we were then crossing. The first glimpse of this wide smiling valley was a revelation of the social condition of its inhabitants, and of this part of the island in general. Before the road on which we were travelling was made, those who dwelt in it must have been quite shut out from the world, even from the little Corsican world. The traditions, customs, and ideas of their ancestors must have been transmitted from one generation to another, with little or no change, and century after century would thus pass without modifying the national characteristics.

In one corner of this smiling valley, on a promontory that juts into the sea from its north-western extremity, there is a little village called Cargese, which strongly illustrates these facts. In the fourteenth century several hundred Greeks, flying from Turkish tyranny, were allowed by the Corsicans to land in this remote spot, and to found a colony. Such as it was then, it is to this day, a Greek colony. The descendants of the first settlers have retained their religion, their language, their dress, their customs, without mixing with the surrounding population. It is a village of Attica, lost in a corner of Corsica.

At the mountain village of Vico, for it is a mere village, although dignified by the name of town, we were hospitably received at a small and unpretending inn. The servant maid, who served us at supper, a pretty girl of

seventeen, had thoroughly Grecian features, and on my asking her whence she came, she answered from Cargese. On inquiring as to whether she meant to marry at Vico, she said no, she must go home for that.

The road beyond Ponto passes through the wildest, most mountainous, and most inaccessible part of the entire coast. The primeval forest here descends all but to the sea-line on the west, whilst it climbs up the mountain peaks and buttresses on the east, and communicates with nearly all the grandest and most inaccessible forests of the island. In the nearest forest, that of Aitone, are innumerable larches one hundred and twenty feet high, with a diameter of nine feet at their base. They push their vigorous roots in the crevices of the hardest rocks, on the most precipitous regions of the mountain, and then rise straight as an arrow, pointing to the clouds. The hardy pedestrian would find in these forest-clad mountains innumerable sites combining "the wild and savage beauty of Swiss scenery with the isolation, the silence, of the primeval forests of America." (Marmocchi.)

On our excursion to Vico we had an adventure, which may be worth relating as an illustration of Corsican travel. At the stage which commences at the summit of the mountain ascended on leaving Ajaccio, we took up, as driver, a wild, half-intoxicated young Corsican, whose looks none of us liked. When on the box he found that he had lost his whip, but regardless of that very important fact, he started in grand style. We were descending by a road several miles in length, from the summit to the base of the mountain. Gradually the speed of the horses increased, but instead of restraining them he urged them on by wild shouts and gesticulations, until the heavy diligence flew down the steep descent. In vain we tried to make him moderate his speed; both he and his horses seemed too excited to listen to reason, and we continued to plunge madly downwards, turning sharp corners in such a manner as to threaten instant destruction. We saw that he could no longer stop the horses if he wished it, so concluded to leave him alone, and to take our chance.

The horses were three in number, driven abreast; the

centre one a powerful stallion. As we neared the valley, maddened by the speed and by the voice of his wild driver, he suddenly jumped on one of the horses by his side, like a wolf on a deer, fastened his teeth into each side of the back, and bit him so savagely that the blood spurted on the road on both sides. The poor horse, thus attacked, reared and plunged, writhing and backing. The diligence, during the struggle, was swayed in every direction, and finally backed to the side, where there was a precipitous descent. We should no doubt have been thrown down it had not the conductor, a brave old man, managed to jump down, and with our assistance to get hold of the horses' heads. The driver, having no whip, was quite powerless. The side horses were so terrified to be near their savage companion that we had great difficulty in reaching the end of the stage.

On the return journey we found the wild driver waiting for us, but I had heard in the meanwhile, at Vico and elsewhere, that he was a brutal, drunken, good-for-nothing youth, the terror of the road, that he daily imperilled the safety of the diligence, but that he was known to be of so violent a character that no one durst complain of him, for fear of the consequences. I and my friends at once refused to let him keep his seat on the box, and insisted on the previous driver taking us through to Ajaccio. With great difficulty we made him dismount, and got to our journey's end safely.

On arrival I immediately lodged a complaint against this man, and to make sure, also sent it to head-quarters at Bastia. I must confess, however, that I and my friends were not sorry we were leaving Ajaccio the next day, having a vague idea, with Corsican vendetta staring us in the face, that we had made the place rather "too hot" for us. I must add, however, that this is the only instance in which I had reason to complain of the drivers during my three visits to Corsica. I believe that it was quite an accidental circumstance, for in every other instance I have found them courteous, and although rather daring, prudent and careful.

The southern regions of Corsica, both on the west and

east side of the central mountain ranges, are much more wild, more uncultivated, and more sparsely inhabited, than the northern. On my third visit to Corsica, in the spring of 1868, I devoted the greater part of the few weeks I had to spare to a tour in these the southern regions, which I had not before visited, thus completing the survey of the island. I travelled from Ajaccio to Sartene, made an excursion into the mountains at Sta. Lucia di Tallano, and then pursued the journey from Sartene to Bonifacio, and from thence to Porto Vecchio and to Bastia by the eastern coast.

Every mile of the road from Ajaccio to Sartene is beautiful in the extreme. The Bonifacio diligence, leaving Ajaccio early in the morning, reaches Sartene in the evening, where an inn is found at which the night may be passed with tolerable comfort.

Granite buttresses continue to strike out from the central chain to the western sea, enclosing lovely valleys; thus the coast road is a perpetual ascent and descent. When it has laboriously ascended one of these granite spurs, it immediately descends, a brawling alpine river is crossed at the bottom of the valley, and then it again ascends the next buttress. The road has been made within the last few years, at immense expense and trouble, by blasting and cutting a kind of shelf or terrace in the side of the mountain, alternately through solid granite, compact granitic sandstone, and loose granitic gravel.

Owing to the great depth of the cuttings thus made on the inner or mountain side of the road, the character of the root vegetation is very clearly revealed at every step, and some instructive facts are brought to light. Thus the vigorous growth of the shrubs on the flanks of mountains, baked by a southern sun during a long summer, with little or no summer rain, is explained by the length and strength of their long fibrous roots. They descend right through compact gravel or sand, through crevices and faults in the sandstone or granite rocks, imperceptible to the eye, to a depth of two, four, six, or more feet. In many instances they appear to pierce the very rock itself, and thus it is, no doubt, that they find the moisture necessary to their existence.

We see the same feature in root developments in sandy districts at home, when recently opened out by a railway cutting. The roots of the common Brake Fern, the Pteris aquilina, and of the Gorse and Heather, descend to a great depth below the surface. My garden in Surrey is of this character, an arid sand, and I find few or no plants flourish in it, unless they have long fibrous or "tap" roots (such as Eschscholtzia), which can go down all but any depth for moisture and nourishment. The heavy autumnal and spring rains, penetrating deeply into the soil and into the crevices and cracks of the Corsican rocks, provide moisture to plants even during the protracted droughts of the southern summer. Where no rain falls at any time of the year, as in some parts of the coast of Peru, there is said to be no spontaneous vegetation whatever. The absolute necessity of heavy winter rains, even in a dry climate such as that of the south of Europe, to enable crops to be raised and fruit trees to produce fruit, is illustrated by deficient harvests after winter drought. If the winter rains are much below the average, the rain does not penetrate much below the surface, so that the roots of the Olive and Orange trees, which descend rather deep, are not moistened. When this occurs the trees live, but no fruit crop is produced the following autumn.

I found great anxiety expressed in Corsica on this occasion about rain, the winter having been a very dry one. It was generally stated that if the rain did not come within a fortnight, and rain cannot be depended upon at this season of the year, the crops would be seriously compromised. Although one-eighth of the island is still covered with primeval forests, the question is everywhere discussed as to whether the mountain sides in accessible places have not been too freely cleared of their timber. The clearance of forest land in France is generally acknowledged, by all competent authorities, to be the principal cause of the disastrous droughts in the southern provinces, as well as of the constant inundations of all the large rivers. The French Government is therefore taking active measures to have the mountain sides replanted. At Ajaccio

I heard that hundreds of sacks of the seeds of the noble Corsican Pinus Larix are annually exported to the Continent for that purpose.

In April in Corsica the roadside in the valleys, especially under Chestnut trees, as I have stated, is enamelled with the purple Cyclamen. Its lovely flowers are seen in as great profusion as Daisies with us in the regions where the soil is congenial. On trying to get up some bulbs with a pocket-knife, I found that they were generally so deeply embedded as to be nearly unattainable, a foot or more deep. With us the Cyclamen is usually planted at the top of the pot, but this mode of cultivation is evidently not necessary, as Nature does not follow it. In the wild state the bulb is covered by successive layers of dead leaves, and thus becomes deeply buried. I believe that planted in rich, light soil, a foot from the surface, in our gardens, it would escape winter frost, prove hardy, and be a great ornament in early summer.

The next morning my future host, M. Giacomoni, Mayor of Sta. Lucia di Tallano, with whom I had promised to spend a few days in his mountain home, arrived before I was up. After partaking of a capital breakfast, we started in a kind of light spring cart, drawn by two wild Corsican ponies. They rattled down the hill on which Sartene is placed in fine style, and we soon reached the lower part of a valley, crossed the night before in the diligence; we had to ascend this valley to reach our destination. In the centre of the valley was a lovely little river, about forty feet broad, and on each side smiling grass meadows, and, occasionally, cultivated fields, with Willows and other trees on the margin. It looked like a pretty bit of river scenery in England, and I could scarcely believe my companion when he told me that the district was so deadly in summer, that no one could live or work there after June on account of malaria, without risking life. Some years ago some French agriculturists from the Continent saw this smiling valley, and, appreciating the depth and goodness of the soil, and its small pecuniary value, bought an estate. Then, laughing at the fears of

the Corsican peasantry, they built a house and began tilling and planting as in the north. They all got fever, however, and they all died in less than two years!

When we reached an elevation of 300 feet by the barometer, M. Giacomoni turning round, showed me a mill-house, and said, "Now we are out of the malaria region, people can and do live all the year in that house."

Here we had another travelling incident worth narrating as illustrative of the Corsican character. Some slight alteration was required to the harness, and we both got out. Taking advantage of a moment's liberty, the ponies bolted, and were soon out of sight, leaving us standing in the road, much to the chagrin of my host. There was nothing for it but to walk on in the blazing sun, with the prospect of having to finish our journey, some ten miles, on foot. We had not, however, gone very far when we met, coming towards us, two Corsican shepherds, mounted on shaggy little ponies. My friend, who did not seem to enjoy the walk as much as I did, asked these men to lend us their steeds, which they cheerfully did, so we mounted triumphantly, whilst they trudged quietly by our side, talking in patois to M. Giacomoni. Two or three miles further on we had the satisfaction of seeing the carriage and ponies undamaged in the hands of a peasant. They had continued at full gallop until they reached a steep acclivity. Then they slackened their speed, and the peasant seeing them without driver, stopped them. On getting off our ponies I thanked the owners, and offered one of them a gratuity. With a smile he pushed my hand aside, saying, "No, sir; a Corsican does not receive a gratuity for a small service rendered. If you were to offer me fifty thousand francs you might tempt me, but I do not want five; I had rather have your thanks." To such reasoning there was nothing to be answered.

Gradually the road became more mountainous, and the little river assumed more and more the character of an alpine trout stream. Still cultivation and fertility followed our track. At last, after a four hours' drive, we reached our destination. I was most cordially received by three very charming ladies, the wife and daughters of my host.

With them I remained several days, greatly enjoying their gentle refined companionship, listening to the annals of this little village lost in the mountains of Corsica. To my young lady friends Sartene was the great town, where they had been to school, where the shops were. None of the family had been out of the island, and the ladies had not even been to Ajaccio or Bastia; they were too far off! Then the mayor and I used to adjourn to the village and talk public matters with some of the wise men, with old warriors, pensioners of the French army, come to end their days in their native village, on the small pittance allowed them. The Corsicans are very partial to the army. It is said that there are now more than a thousand Corsican officers in the French army, and the towns and villages of Corsica are full of old soldiers come back to die in their native mountains. My visit was quite a public event. No Englishman, I was told, had been at Taliano for a hundred years—since the days of Paoli, before the French annexation—so curious but friendly glances followed me everywhere.

At this time of the year Sta. Lucia di Tallano was a little earthly paradise. It is situated at the head of a smiling valley, 1600 feet above the level of the sea, in a region where the oïdium, the Potato disease, the silkworm disease, cholera, and the summer fevers of the lower regions, all are equally unknown. It looks directly to the south towards the sea, which is concealed from the sight by a coast range of high mountains, and is protected from the north by a semicircle of mountains. The Vine, cereals of all sorts, Grasses, natural and artificial, and every kind of fruit tree, flourish in abundance in the rich soil formed by the breaking up of the granite rocks. The extreme luxuriance of fruit trees, and especially of Almond, Peach, and Apricot trees on the Genoese Riviera, proves to demonstration that chalk and lime suit their constitution, inasmuch as that soil is a mere break-up of limestone rocks: but their equal luxuriance on this soil—a granitic micaceous schist, mixed with vegetable matter—also shows that they find in it all the elements of nutrition. On each side of the valley, on the higher mountain sides, the Ilex, or evergreen Oak, climbs towards the sky in serried ranks. This tree is one of the

principal vegetable products of the island, and alone constitutes many of the smaller forests. When growing in the lower region of valleys, in deep soil, it assumes a large size, and has much of the dignified character of our common Oak, only the foliage is more sombre and denser. The wood is not much esteemed, rotting early, so that it is principally used for making charcoal.

A great deal of the land around is planted with vines, and under the intelligent management of M. Giacomoni, the largest proprietor of the district, these vines are made to produce an excellent wine—the Vin de Tallano. Very like an unfortified port, it improves year by year by keeping, and with age becomes a superior wine. At the outlet of this fertile valley, comprised between two spurs of the mountain, there is a little port called Propiano, whence its products reach Ajaccio and the mainland.

On returning to Sartene I took up my quarters at the inn, hired a species of gig to take me the next day to Bonifacio, fifty-six miles, and then set out to explore the place. This was soon accomplished. Sartene is a small inland town like Corte, at the west base of the southern central mountains, and is separated from the western sea by another ridge. In olden times it was generally in the hands of the national party, and is still inhabited by some of the oldest Corsican families. Like Corte, it is an unprepossessing place, a kind of overgrown village, with some evidence of recent prosperity and progress in the shape of new tall five-storied French houses, very unsuitable for a hot summer climate. The French do not seem to know better than to build tall Parisian six-storied houses, all windows, wherever they go. Thus I found at Algiers and at Oran all the modern houses built in this style. Such houses must be simply unbearable in sultry weather.

The weather was heavenly, the road enchanting, and the country one mass of the spring flowers of sandstone formations. The road, a very good one, winds in and out, up hill and down dale, often coming near the sea, then receding from it, with rocks or hills intervening, with the granite mountains to the east. As we approached the southern extremity of the island I was more and more struck by the

conclusive evidence on all sides of glacial as well as of antecedent volcanic action. The granite rocks were torn, twisted, and broken into every conceivable shape, but prominent above all were granite boulders of all sizes, immense blocks as well as small ones, lying, in every direction, one on the other, in indescribable confusion. Evidently they had been dropped by glaciers at this the extremity of the great central granite chain of Corsica. At last there was nothing left of the central mountains but confused groups of these boulders, some of which appeared to have been purposely dropped "by hand" on others larger in size; like a paving-stone gently deposited on a table.

We stopped to rest at midday for a couple of hours at a shed on the roadside where horses are kept for the diligence. It was in the very midst of this boulder drift, and a careful examination of a considerable area convinced me that no other physical fact but glacial action could account for what I saw. No doubt, in the glacial period, glaciers extended all down Corsica, and this would be the region where they would end and form a "moraine."

A little before reaching Bonifacio the granite formation ceases, and the rocks become tertiary, cretaceous. Bonifacio is a fortified town occupying a promontory, the sides of which towards the sea are precipitous and slightly excavated by the waves, so that it all but overhangs the Straits at an elevation of one hundred and fifty feet. It is a mere large fortified village, with narrow streets, large barracks, and a villanous inn. I was very cordially received by M. Montepagano, the mayor, a well-informed physician, and by M. Piras, the judge, friends of M. Piccioni of Bastia. These gentlemen placed themselves at my disposal, and took me in a boat to see some splendid caverns in the calcareous rocks, like churches. Here the Bonifacians, during the heat of summer, fish, picnic, and bathe, often spending the entire day enjoying the coolness and freshness of these marine retreats. They also took me to a pretty convent or hermitage in the rocks two miles from the town, where a Benedictine monk lives in a glorious solitude, the picturesque beauty of which I do not think he fully appreciates, from his response to some remarks of mine about the

magnificent view and the picturesque rocks which surround him. He, assenting, explained that they so sheltered his garden that he could grow cabbages all summer. M. Piras, my host, who had recently purchased a large extent of the "maquis," through which we passed on our way to the hermitage, was full of plans for its redemption, The great difficulty he said was the labour question.

The Bonifacians, however poor, have preserved the habits of their ancestors when the town was a fortified city, often besieged. They live inside, keep donkeys, and ride out to work in the country, every morning. This destroys all interest in their labours, makes them idle and ever ready to shirk work, to remain in the town that they may drink and gossip with their wives. The latter and the children, on this system, bring nothing to the common fund, and acquire habits of idleness difficult to eradicate.

I was anxious to pay Garibaldi a visit at Caprera, on the other side of the Straits, and my new allies placed the government cutter at my disposal for the cruise. Unfortunately there was a dead calm, and after waiting twenty-four hours for wind, I was reluctantly obliged to give up all idea of the intended excursion, to take leave of my hospitable friends, and to embark in the diligence for Bastia by the eastern coast. This journey takes twenty-four hours, a night and day, but I divided it. I had an introduction to Dr. Tavera, the head physician to the penitentiary of Casabianda, a little more than half-way, who gave me a bed and a fraternal reception, and I was thus enabled to escape the night travelling.

The road to Bastia from Bonifacio is a shore road that skirts the entire eastern coast of Corsica, from south to north, and seldom loses sight of the sea. For the first few miles out of Bonifacio the chalky soil continues, then the granite, sandstone, and gravel make their appearance, and with them the brushwood, or maquis, Cistus, Cytisus, Lentiscus, Dwarf Ilex. I was on the imperial or top of the diligence for the view, sitting next to the conductor, who had a gun at his side. It was, he said, in order to take a shot at any game that might chance to cross the road. In winter he often bagged hares, birds, and some-

times wild boars. Two of the latter actually crossed the road, but at too great a distance to allow of his showing his skill. On the road from Sartene to Bonifacio, we had travelled all day without meeting a single carriage or cart, and not a dozen pedestrians. It was pretty much the same on the eastern road. The country was lovely, smiling with nature's gifts, but as to inhabitants, they were few and far between.

Porto Vecchio was reached in a few hours. It is at the bottom of a fine bay, and in olden, classical times, was a seaport of some importance. Now it is a mere village, the centre, however, of an extensive district. On the land side it is surrounded by marshes, which make it so unhealthy, that in summer nearly all the inhabitants go up to the mountains. Those who remain to keep house, all but invariably get fever; it is the penalty they pay for taking care of the town.

Soon after leaving Porto Vecchio, we entered upon the fertile, productive, calcareous plains which lie at the foot of the eastern cretaceous mountains. The vegetation was that of rich alluvial meadow-land in England, and it was difficult to believe that we were passing through a district so malarious, as to be all but uninhabitable during the summer months. But the paucity of villages and of inhabited houses along the road was very significative, as was, on the other hand, the presence of numerous villages on the Olive-clad mountain to the west.

I arrived at the penitentiary of Casabianda late in the evening, and was not sorry to see the diligence move on, whilst I was to enjoy the hospitality and companionship of one whom I knew to be an intellectual Corsican physician. Dr. Tavera is one of those pioneers of social progress and civilization of whose devoted and enthusiastic labours the world knows little. At the head of the penitentiary, in which are confined a thousand criminals of the most dangerous class, his difficult but praiseworthy task is to reclaim them, and to accomplish this arduous undertaking, by conquering pestilence and disease, and by taking the sting out of fair nature run riot. I had a long conversation with the doctor that night and the next day about his labours

and about malaria and fever in Corsica, and his experience confirmed my previous convictions.

As I have already stated (page 375), on the authority of my friend Dr. Dundas, and others, it is an undeniable fact, that in warm climates intermittent and remittent fevers may occur where there are no marshes, as a mere result of a chill in an organization weakened by intense and protracted heat. It is possible that such chills may be the principal or sole cause of these fevers, even in low, damp, reputed malarious regions. Such, indeed, is the opinion of a very enlightened French author, Dr. Armand, who was many years with the French army in Algeria, and has written a most valuable work on the climate and diseases of that country, to which I shall have occasion to refer when describing my own Algerian experiences. This opinion has been very ably supported by Mr. Oldham of the Indian army in a work published in 1871, entitled "What is Malaria?" He proves, most convincingly, that in India, as we have seen to be the case in the Brazils, in Algeria, in Corsica, and elsewhere, malarious fevers can be generated without the sufferer being exposed to marsh miasmata, by mere chill after intense heat.

Still the fact remains that low-lying, damp, swampy regions in tropical, semi-tropical, and even northern countries, are so decimated by these fevers that the existence of a malaria poison has been universally admitted by the medical profession. In the present state of science, therefore, the safest plan is to accept both causes in the production of malarious fevers, marsh poison, and chill following intense heat, long endured.

In this, my last visit to Corsica, my attention was mainly directed to this question of malaria and fever. Having been, I think I may say, a leading agent in opening out Corsica to the invalid and tourist world, I felt it a duty to clear up the question as far as was possible. The results at which I have arrived may be embodied in a few words.

Wherever in Corsica a river or torrent descends from the mountains or valleys, and empties itself into the sea, there is malaria, or intermittent fever, in summer and

autumn, in the plains which it waters, from the sea-level to an altitude varying between 300 and 500 feet. This I ascertained with the barometer. On ascending these valleys, when the barometer indicated an elevation of from 300 to 500 feet, I was all but invariably told, "Now we are safe; people can live here all the year round." In the more malarious regions of these plains I generally found that we were only a few feet above the sea-level, and that the country was nearly flat. In Algeria the same immunity does not appear to be secured by such an elevation. Indeed, in Algeria I found fever to exist all but everywhere during the heats of summer, which is no doubt much more sultry than that of Corsica. In Corsica the fever sets in towards the latter end of June, increases in intensity until October, and disappears towards the end of October, as the days and nights become colder. It is often very severe, and assumes occasionally the pernicious form. It complicates nearly all other diseases that occur whilst it reigns. On the eastern coast, where, as we have seen, there are a series of marshes and ponds through which the rivers empty themselves into the sea, the malaria fever is more severe and more fatal than elsewhere.

The few villages and isolated houses in these malarious plains are only inhabited during the cool months of the year. By the beginning or middle of July the harvest is over, and then the entire population abandon their homes and go to the mountains behind, there to occupy other habitations at an altitude of several thousand feet, during the hot months. Well-to-do people leave at the beginning of June, to return at the end of October. The working class leave when the harvest is over in July, and return early in October to till the ground.

Malarious fevers exist not only in Corsica, but in Sardinia, in Sicily, and in all the Mediterranean islands, and on the mainland, under the same conditions, wherever a river runs into the sea. It would seem that the extreme prevalence of intermittent on the Mediterranean shores, at the outlets of rivers, in a temperate climate, is in a great measure owing to the sea being all but tideless. When storms come, the sand and shingle are thrown up in great

masses at the mouths of the rivers. There is no tidal scour as in the Atlantic, so that the waters of the river are pent up, flow back, and swamp all the lowlands, saturating them with moisture. Dead and decaying vegetable matter not being purified by the action of winter frosts, as in northern countries, the advent of the powerful summer sun produces that state of soil which gives rise to aguish fevers. It requires no marsh or pond to produce malaria; some of the most pestilential plains I saw—plains where human beings cannot live in summer—were as healthy, as innocent-looking in April and May as the banks of the Trent or of the Thames. It really appears quite sufficient to produce aguish fever in a tropical country that the land should have been saturated with water, either from rain or overflow, in winter, that there should not be a good fall for drainage, and that the July heat should be reached. The natives of these countries know this, and act accordingly; but northerners do not, and are often difficult to convince, to their own destruction. They cannot believe that a smiling cornfield by the side of a pure running stream, such as they have fished in and bathed in day after day in their youth, during sultry August weather at home, can possibly be in these countries pestilential—a place to fly from as soon as spring is over. They laugh at such reports. They think the natives faint-hearted, lazy cravens, and go about their work as at home, to sicken and die in a year or two. I have already mentioned one history of this kind, but that of the Casabianda penitentiary is still more remarkable.

Casabianda is an agricultural colony of convicts, founded by the French Government in 1864, in order to drain and reclaim some of the ponds and swamps of the eastern coast. Unfortunately the Government gave the first appointment of director to a clever energetic officer, but a northerner, who knew nothing of Corsica or of its fever. He thought all he heard nonsense; that the fever was the result of the men working in the heat of the day and being badly fed. So he had the convicts up before daylight, and made them work at the drainage in "the cool of the morning." Then he had them home in the heat of the

day for dinner and a *siesta*, and sent them out to work again in the "cool of the evening." The local medical men and the Corsicans around him stood aghast at a plan so contrary to all their experience. For they wait until the sun has dispersed early watery vapours, and return home before sunset. But he was not to be persuaded, reported the medical men under him for "insubordination," and had his own way. The result may be easily foretold. He lost during two years 65 per cent. of the convicts, or 665 out of the 1000 each year. The Government was horror-struck, and the colony would have been abandoned had not the stubborn director, most fortunately, himself died of the fever. A more rational man was then appointed, who allowed the medical staff free scope, and everything was reversed. The men were sent to work an hour after sunrise, and brought home an hour before sunset. In the summer they were all transferred to the mountains, and various other precautions were taken, with such good results that now the mortality, in the same conditions and locality, is only 3½ per cent., or 35 per 1000. These details I had from Dr. Tavera, the present medical superintendent of the penitentiary, to whose energetic efforts much of the improvement is due. Great works have been accomplished; one or two large brackish ponds and swamps have been already drained, and a vast amount of land reclaimed.

It seems incredible that such perverse stubbornness on the part of officials in authority should exist, and that masses of human beings should be shouldered into eternity through their blind opposition to professional knowledge. But similar circumstances are constantly occurring. Thus, at the commencement of the Crimean war our troops were located in autumn, by the officer in command, at the side of a malarious fresh-water lake, near Varna, in direct opposition to the medical staff; and soon after the camp was decimated by fever. In the year 1869 a regiment was transferred from the Cape to Mauritius by its colonel, during a severe epidemic of fever at the latter locality, in direct opposition to the medical staff, merely for the men to sicken and die by the hundred.

The practical deductions I draw from these researches are, that any part of Corsica is safe as a residence, either for invalids or tourists, from the end of October to the end of the second week in May; but I do not advise either the one or the other to go to Corsica, or to remain there during the summer months, unless they leave the plains and the outlets of rivers, and settle on some mountain height. As the mountains rise to a height of nine thousand feet, there are many glorious regions where, throughout the heats of summer, a bracing healthy climate, and immunity from the intense summer heat of the Mediterranean would be secured; but at present this advice cannot be followed, because no mountain accommodation exists. The establishment of some such cool mountain retreat for summer would be a great boon to the inhabitants of the Riviera, as well as to Corsican visitors. I am convinced that the Riviera is no more safe as a residence for northerners after the second or third week in May than Corsica. Although there are no marshes, every year there are cases of fever at Mentone among the patients who remain against my advice.

A large portion of the surface of Corsica—I may say all that is not a primeval forest or under cultivation—is covered with what they call "maquis." I do not like to use the word brushwood or scrub, for such are very common terms to apply to groves of underwood composed of Myrtle, Arbutus, Cistus, rock-Roses, and Mediterranean Heath, and yet of such is the interminable "maquis" composed. These choice shrubs are the weeds of Corsica, growing wherever nature is left to herself, wherever the soil is not covered with timber. Indeed they soon again turn cultivated lands into brushwood if left uncultivated for a few years.

The existence of this maquis, or brushwood, on all open ground, constitutes a feature in the social history of Corsica. It contributed much to the security of the outlaws or banditti. Growing generally from six to ten feet high, and where the soil is good to fifteen or twenty, it offers an all but impenetrable refuge. On the other hand, its invasion of all uncultivated soil in dense masses, renders it difficult and expensive to redeem land, and to

bring it into cultivation, once it has fallen into the wild state.

Until within the last few years all cattle, to whomsoever belonging, had a right to pasture in the maquis. The result was the existence of roving flocks of sheep or goats, entrusted to shepherds or belonging to them, that passed from one part of the country to the other according to the season. These flocks committed great depredations, especially the goats, and rendered husbandry difficult and precarious in the districts which they visited. Goats are so nimble and light footed that no ordinary fence will keep them out of a field, nothing short of a ten-feet wall; so I found them everywhere in very bad odour. It is in reality the condition of an unsettled country; many parts of Spain are to this day a desert from this cause.

A law has, however, been passed, prohibiting what is called the "libre parcours," or free pasturage. No cattle are now allowed to pasture in grounds that do not belong to their owner, or that are not let to him; nor are they allowed to roam untended. This necessary law has been of great service to agriculture, but, like all progress, it has its painful side, for I was told by peasants that they could now get no meat. It is like the enclosure of our commons. The peasantry who did not own land had flocks which they drove into the maquis, and on the products of which they partly subsisted. Now they are reduced in a great measure to the products of their own labour.

England itself was very much like Corsica two hundred years ago, according to contemporary writers; it was half covered with moors, fens, marshes, and forest. Sheep and goats were considered mischievous animals and much abused, and the poor helped life with common rights. Since the accession of George II. four thousand Acts have been passed for the enclosure of commons, and most of the fens and marshes have been drained. France is not so advanced; many of her departments are still covered with ponds and marshes, which render the neighbouring country so unhealthy that it is decimated with malarious fevers. Thus in *La Bresse*, a triangle situated between the Saone, the Ain and the Rhone, full of ponds and marshes, the

average duration of life is only twenty-four years, in some parishes only eighteen, instead of thirty-five, the general average for France. These ponds are partly artificial, and were mostly created in the 16th and 17th century, to propagate fish, for which there was a great demand, owing to the rigorous observance of the fast days of the Roman Church. The ponds are drained off after two years, the fish sold, and the bottom cultivated with cereals for two years, when they are again laid under water and stocked with fish. The French authorities are doing their best to do away with these centres of malaria, but meet with great resistance from the proprietors and inhabitants, who, as is so often the case, cling to the causes of their ill-health and premature death, from interested motives.

The milk of the sheep, as well as that of the goats, is largely consumed as an article of diet, both in the shape of milk and in that of cheese. It is, I was told, a most important resource, especially in the mountain districts, and I found it very palatable and good. Would not our own Highlanders find in the milk of their sheep a valuable article of diet? It is, and has been, consumed from time immemorial all over Asia in mountain districts, and is everywhere greatly esteemed. The large flocks of North Britain would offer a bountiful supply of this valuable article of food, and the famines which decimate the Highlands might thus be rendered less serious. It is true that the number of lambs reared would be greatly diminished, and, consequently, rents would suffer!

The Corsicans mix the milk with chestnut-flour. The chestnuts are dried in an oven when they fall, in the autumn, and when wanted ground into flour. With this flour cakes are made and laid on chestnut leaves, which, when baked, constitute their principal food. To strangers these cakes taste sweet and insipid, but the natives are very fond of them.

In the great primeval forests are to be found wild boars and small game in abundance. In the higher mountains the native race of wild sheep, called mouflons, are met with. Their presence in the mountains is a strong attraction to enthusiastic sportsmen. In the alluvial plains on

the eastern coast game abounds, and in the autumn and winter all kinds of water-fowl are met with in profusion. In the early autumn season, however, these districts are so very unhealthy that the pursuit of the game would probably be followed by severe fever. Game, large and small, is more abundant in the southern and eastern parts of Corsica, because they are the wildest and most thinly inhabited. The long prohibition of firearms, and of legitimate sport, has not tended to increase the stock of game in the neighbourhood of the towns and in the more populous parts of the island, but rather the reverse. Not being able to shoot game as heretofore, the entire agricultural population have devoted their energies to trapping, and, according to report, with such success as to have sensibly diminished its numbers.

Such I found Corsica. To me on each of my three visits it has proved a most enjoyable and fascinating country. The ten or twelve weeks that I have thus spent travelling in this lovely island have been among the pleasantest of my life, and I trust that the description given will lead many to visit its hospitable shores.

What I have said will show there is in Corsica much to study and interest, as well as much to admire. It is new untrodden ground, a country in a state of transition, emerging from the barbarism of the Middle Ages in this the nineteenth century, as the Highlands of Scotland did in the eighteenth. The firm establishment of law and public security will surely regenerate the country here as elsewhere. There are not now three outlaws in the entire island; life and property are as safe as in any department of France, or any county of England, and once the fact is known capital will begin to flow into Corsica, and will fertilize it as the Nile fertilizes Egypt. The climate is good, the soil is fertile, the natural resources great; but, although situated at the very door of Europe, all are still dormant for the want of capital.

The French Government has done a deal already for this island; indeed, it has cost France several millions in public works since its first occupation, a hundred years ago (June, 1769). The money, however, is well invested, and it is to

be hoped that the authorities will not hesitate to complete what has been commenced. Once the roads in course of construction and contemplated are finished, no doubt assistance will be given to the proprietors to bring the valleys into cultivation by drainage, and to secure a proper outlet for the rivers. To keep the rivers open and to preserve the plains from inundation is beyond the resource or knowledge of a peasant proprietary. It should and must be done by the Government engineers, as in the Roman and Grecian States in former days. A channel for the river should be formed and carried into deep water, and its entrance occasionally dredged. Works of this kind have been successfully carried out at the mouth of the river Liamone, near Ajaccio, with great benefit to the adjoining country.

M. le Comte de Grandchamps, an eminent French engineer, has entered at length into this question, and into all others connected with the material prosperity of Corsica, in a very valuable work, which I can cordially recommend to those who feel interested in the subject. His book is entitled "La Corse; sa colonisation et son rôle dans la Mediterranée. Seconde édition. 1859."

Several of the most enlightened and energetic Corsican proprietors whom I met with told me that however anxious they might be to utilize the natural resources and fertility of their country, they could not do it for want of capital, for there was none in the country. They had land, good land, and plenty of it, but no money; so the land remained covered with maquis, and merely gave them a bare physical maintenance. What was wanted was for continental capitalists to bring money into the island.

I certainly saw in the neighbourhood of Bastia, perhaps the only town in Corsica where there is any capital, marvellous results from its employment. Land purchased at say four or five pounds an acre, cleared and planted, was said to have become worth five times the money spent on it, in the course of half a dozen years.

I would recommend all who feel disposed to make a tour in Corsica to read carefully Gregorovius' "Wanderings in Corsica, its History and its Heroes." As I have stated, it is a most charming book, even for tarry-at-home tra-

vellers. Another useful work for intending tourists, is a little book entitled "Notes on the Island of Corsica," by Miss T. Campbell, which contains a deal of useful information. Miss Campbell has been now a winter resident at Ajaccio for many years, and has devoted all her time and all her energies to furthering the advancement of Ajaccio, and its colonization by the British. I must also mention Mr. Thomas Forester's "Rambles in the Islands of Corsica and Sardinia," and Mr. Edward Lear's "Journal of a Landscape Painter in Corsica." Both these works are very interesting, and contain much valuable information. The first edition of Mr. Forester's book appeared in 1858; a second edition has since been published. Mr. Lear's work contains numerous wood engravings of Corsican scenery, which well sustain his reputation as an eminent artist. Murray has, also, published one of his valuable Guides, on Corsica. For the days and hours of departure of steamers "Bradshaw's Continental Guide" for the month should be consulted, as they vary from year to year. Thus prepared, the traveller will be sure to gain both pleasure and information from an excursion in this most picturesque island.

Those who are afraid of the sea can both go and return by Leghorn and Bastia. Corsica and Sardinia act as a western breakwater to the coast of Italy, so that the channel between the islands and Italy is a much calmer sea than the more open space between Ajaccio and Marseilles. In the spring months of April, May, and June, this part of the Mediterranean is often calm for weeks together. I should again advise no one to go to Corsica in early autumn, on account of the malaria which still prevails in many parts of the coast that the traveller would wish to visit.

A railroad from Bastia to Bonifacio, along the eastern coast, has long been discussed, and will, it is said, be very shortly constructed. Such a line would not be a very expensive one to make, as the country is flat nearly all the way, a plain at the foot of the mountains. When completed it will contribute greatly to the prosperity of the island, connecting the north with the south. At present there is but ittle intercourse; most of my Bastia friends had never

been to Bonifacio, and knew nothing personally of the resources of the southern part of the island. Moreover, as the Straits of Bonifacio are not wide, and the Sardinian railway will soon be open from Porto Torres to Cagliari, Corsica may hope to see northern tourists choose this route on their way to the southern regions of the Mediterranean.

The best time, no doubt, to visit Corsica is in the spring, as I have done, say from the 1st of April to the 15th of May. In my three visits, extending over nearly three months, I never had one single bad day, not one day of wind, cloud, or rain. Mr. Murray in his Guide says that I am too enthusiastic, and give rather too favourable an account of Corsica. I can only add that I have described it most truthfully as I found it in April and early May. I must, however, repeat, that I advise no real invalid, whose life is actually at stake, to venture in either this or any other new country out of the beaten track, not even into Sutherlandshire or the Hebrides, unless on a visit to a local magnate.

It is worthy of remark that all southern localities and towns are more healthy, and consequently safer to visit in spring than in autumn. In spring they have gone through the winter rains and frosts, which have cleansed and purified them. Thus, Rome and Naples may be visited much more safely by pleasure tourists in February, March, and April, than in November, December, and January. Another important point is, that the sea is often calm at this time of the year in the north regions of the Mediterranean, although not in the south, as I know to my cost. The south of Europe, also, is everywhere much more beautiful in spring than in autumn. In April and May, all that has been written by the poets is indeed realized and found to be thoroughly true. We may, then, without reserve, surrender our minds to the enjoyment of the poetic beauties of early spring, which we can so seldom do in our own northern and treacherous climate.

Grave par Erhard, 12, r. Duguay-Trouin. Paris.

Kilom. Monrocq

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CHAPTER XII.

SICILY.

"Hæc loca vi quondam et vastâ convulsa ruinâ
(Tantum ævi longinqua valet mutare vetustas)
Dissiluisse ferunt: cum protinus utraque tellus
Una foret; venit medio vi pontus, et undis
Hesperium Siculo latus abscidit: arvaque et urbes
Littore diductas angusto interluit æstu.
Dextrum Scylla latus, lævum implacata Charybdis
Obsidet." VIRG. *Æn.* iii.

THE DEPARTURE—CLIMATE AS SHOWN BY VEGETATION—PALERMO—MESSINA—CATANIA—MOUNT ETNA—SYRACUSE—THE RETURN.

In the course of the winter of 1862–63 the desire to visit Sicily took possession of me. I had been attending some Russian ladies who had passed the previous winter at Catania, and also some of my countrymen who had spent some months at Palermo. All were loud in praise of these cities, and insisted that the climate of Sicily was much superior to that of the Riviera. Thus the uncomfortable idea occurred to me that after all I might *not* have discovered in Mentone the best locality in which to spend the winter, so I determined to pass a few weeks in Sicily at the close of our season, and to judge for myself.

As the time for departure approached I began to look around for one or two companions. Many volunteers offered, but one by one they all drew back, from some cause or other, with the exception of some enthusiastic young ladies, whom I could not possibly take, until at last I had to start alone. I cannot say, however, that I was quite abandoned, for on the morning of my departure for Genoa a dear little girl of six, the child of some valued friends, came to me with a small bundle. I had asked her repeatedly to accompany me, but she had always refused, saying that she could not possibly leave her mamma. "Dear Dr

SICILIA (SICILY)

Grave par Erhard, 12, r. Duguay-Trouin. Paris.

Kilomètres

0 10 20 30 40 50 Kil.

Milles de 60 au degré.

0 10 20 30 Milles

Paris_Imp. Monrocq

Bennet," she began, "I cannot bear to see you going to Sicily all alone, with no one to take care of you, so I have made up my mind to leave mamma, and to go with you. I have packed up my things, and I am quite ready." It is singular at how early an age children show the characteristics that will stamp them throughout life. It is marvellous, also, what power a tiny child has to please and attach its seniors, or to repel them.

Although I at last departed alone, it was not without having many friends to see me off, and to wish me a prosperous journey. I am, indeed, struck every year by the great contrast that exists between the arrival and the departure of the winter visitors. This is more especially the case at the house that I inhabit, where there are nearly a hundred residents, most of whom are invalids and their friends settled down for the winter. When the "poor exiles" arrive all is new and strange, and, generally speaking, there is no one to receive them but one of the waiters. But the state of things is very different on departure in spring, after a six months' sojourn. The isolation has ceased, for the house has become full of friends, with whom it is a kind of conscientious duty to see the traveller off. Then comes such a shaking of hands, such a waving of handkerchiefs, as makes the departure a complete ovation. Nor is this "well wishing" confined to friends new and old. The host and hostess and dependents seem to consider it a duty to take a part in the ceremony, and express their good wishes with a cordiality and familiarity strange to our cold northern ways.

Six months' confinement within the limits of even picturesque Mentone is an admirable preparation for such a journey as the one I was undertaking. Starting on a beautiful April morning—and April weather is always beautiful in this part of the world—once the regret of leaving friends has subsided, an exhilarating sense of freedom, of liberty, steals over the mind. To the invalid who departs from his winter retreat with restored or improved health, intense thankfulness is mingled with this feeling. Nearly always the air is warm and balmy, yet fresh and pleasant, the sun shines brightly in the clear blue sky, and

the vegetation is that of July with us. When the Riviera road is chosen, as the carriage progresses, the eye glances involuntarily from the white clouds on the far off horizon, hanging on the mountains of Corsica a hundred miles away, to the sparkling sea, to the now familiar forms of vegetation on the roadside, and to the olive-covered mountains which tower high above the shore.

The Riviera road winds in and out along the beach, at times ascending many hundred feet, at times descending to the sea-level. Ridges of rock, through which it passes, jut out into the waves, like mountain backbones or buttresses, showing at a glance the geological stratifications. Isolated rocks, some large some small, rise out bodily from the sea, generally at the boundary or entrance of pretty bays, sometimes in their centre. When the road ascends a hundred feet above the shore level, the outline and shape of the pebbles and boulders at the bottom of the sea, near the beach, are seen with singular plainness. The eye, at that height, pierces the water and sees the stones at the bottom of the sea, as in one of Creswick's pictures of a trout or salmon stream. Picturesque grey villages and towns are frequently passed, generally consisting of one large narrow street along the shore. They are composed of old, primitive, tall, quaint-looking houses, and their inhabitants form very artistic groups under the porches. A source of surprise to us meat-loving northerners is the absence of butchers' shops, for I only counted two between Mentone and Genoa. Nothing is seen exposed for sale in the eatable line, but bread, maccaroni, dried beans, chestnuts, wine and oil, evidently the staples of the country.

Genoa, the Superb, is seen many hours before it is reached, seated, amphitheatre wise, at the base of a mountain in the centre of its wide sea-like bay. As the traveller approaches, life becomes more active, the villages and towns are more numerous, as are the people who inhabit them. Great ships are building on the beach, on the very road, as it were, and inspire the passing traveller with wonder as to how they are to be got into the sea. Female figures become more and more numerous, looking very picturesque

from their head dress. The Genoese women of the middle class wear on their heads a thin gossamer white or black scarf. It is fastened to the hair and comb, and hangs gracefully down on both sides. The women of the lower class wear, in the same style, gaudy, many-coloured cotton scarfs. Indeed, the love of vivid colours seems to increase as we descend south. Red assumes a prominent feature in the dress of the women, and the large umbrellas are generally of the same vivid hue. The outsides of the houses, also, are ornamented with frescoes, which reproduce all the colours of the rainbow, and give great animation to the scene. Vividness in colour probably becomes an actual want to southerners, accustomed to intense light, to the glare of a southern sun; whilst northerners, accustomed to sombre skies and to subdued light, are satisfied with more subdued colours—to green, grey, and black. Soon we reach the busy suburbs of a great city, and in a few minutes more we are in the middle of one of the greatest commercial marts of the Mediterranean.

By far the best way of reaching Palermo is from Marseilles by one of the Messageries Maritimes Alexandria boats, which touches at Palermo every fortnight. From Genoa the route is by Naples, between which and Sicily there is frequent communication, so I was obliged to go by way of Naples. This, however, I did not regret, for it gave me the opportunity of paying another visit to Pompeii, which is always seen with renewed pleasure. Only one-third of the town of former days has been revealed, and as excavations are constantly going on, every year there are fresh objects of interest to be seen. On this occasion I was shown a singular group of several figures just discovered, a woman, a man, and a girl, in the very act of flying from the shower of ashes, when they were overtaken and smothered. The moulds were found in a state of complete preservation, and owing to this circumstance the curators were enabled to make a plaster cast, which vividly brings to mind the actual event. Every muscular contortion, every detail of shape, is distinctly brought out in this vivid and ghastly group, now preserved in the Museum at Pompeii. I also saw a recently

uncovered subterranean water channel, some four feet wide, and two deep, in which a considerable body of cool pellucid water is seen running rapidly to the sea. A few feet only of the roof had been taken off, and I looked down with interest on this stream of pure water, collected from the adjoining mountains more than eighteen centuries ago, for the use of the town, and which during all that period has been running unseen, hidden in the bosom of the earth, buried with the city it was intended to supply.

There is a steamer every other day from Naples to Palermo, and the sea being calm, and the barometer all right, I went on board, the 15th of April, at 6 P.M. I was the only Englishman on deck, so having nothing else to do I amused myself by watching my companions.

There were many Italians among the passengers, and many partings were taking place. I was interested and pleased to see how strong the affection tie evidently was between those departing and those left behind, and how utterly regardless all appeared to be of the rules which restrain the public manifestation of feeling in England. Grown-up people cried and kissed each other again and again, without the smallest effort at concealment.

One group more especially attracted my attention; a young Neapolitan bride, with her husband and younger brother, as I afterwards learnt, were taking leave of the family of the former, on their departure for Palermo, where the bridegroom resided. There was a boat-load of the young lady's family, father and mother, and three or four sisters. Such sobbing and crying I never saw before. The poor mother and sisters were absolutely convulsed with grief, and could scarcely articulate for their sobs. The captain was positively obliged to have them removed from the vessel when we started, for they could not be persuaded to leave, and even then they kept waving their handkerchiefs from the boat, and breaking out into fresh paroxysms of grief as long as we could see them. The father was as weak as the lady members of his family. I found him, accidentally, in the steward's cabin, taking leave of his younger son, a big boy of fourteen, with sobs and tears and passionate embraces. No one on board

seemed to think it at all strange; on the contrary, I heard on all sides kind Italian expressions of sympathy and interest. The bride cried as hard as the rest at the parting, but she soon wiped her eyes and smiled through her tears when her relatives were out of sight, seeming to find ample compensation in the loving looks and kind speeches of her young husband. So it is in most departures, those who are left behind are the most to be pitied. The new scenes and interests that surround those who depart, tend, if not to console them, at least to draw their thoughts into other channels.

The next morning I was up early, and on deck soon after six. Our course had been prosperous, and I was informed that we should be at our destination by ten. Already the mountains of Sicily were faintly visible on the horizon. The morning was lovely, the air pure and clear, and scarcely a wave on the sea, except those we made ourselves, as we steadily pursued our way, displacing the shining heaving waters. There were only sailors on deck, with the exception of a fat, burly, florid-faced man in a dirty white vest, sitting, with a look of great composure and self-satisfaction, by the side of the engines. In his hands were half a loaf of bread and a huge piece of meat, and with a clasp-knife he kept cutting off slice after slice, evidently much to his own gratification. I at once, by his appearance and occupation, recognised a countryman, and lost no time in making his acquaintance.

I found him very affable, and soon learnt his history. Like my friend of the *Virgilio*, he was the engineer of the steamer, and also a fair specimen of the philosophical roving Englishman. His idea of his duty to himself was to obtain as good pay with as easy a berth as he could, and in order to accomplish this he was prepared to go to any part of the habitable globe. Indeed, there were few regions of the world, he said, to which he had not been, and to which he was not perfectly ready to go, if he found it to his advantage. A few months previous, on returning from China, he had been offered this vessel, and at the same time a new steamer going out to run on the Spanish coast. The pay was the same in both cases, but he preferred

the present vessel, an old one, because old engines, when good, work easily, and give no trouble, whereas new engines, for the first year or two, give a great deal of trouble. If they had offered him more pay he would have taken the new ship; but he was too old a hand to bother himself with new engines when he could get the same money for attending to old ones, that would work of themselves without any trouble. In uttering this sentiment he shut one eye, and gave me a knowing wink, as if mentally applauding his own judgment.

I expressed approval of his decision, and inquired if he was comfortable on board, and was satisfied with his situation. "Perfectly," he answered; "the vessel and engines were good, although nothing to look at; and although he did not know much of their 'lingo,' he managed to make his stokers (Italians) understand him. But then," he added, "I don't let the captain interfere with me, my engine-room, or my men. He tried it on at first, but I soon showed him that it would not do. One of my men was lazy, so, on arriving at Naples, I made him pack up his things, called a boat, shoved him overboard, and told him to come back at his peril. I had to go ashore that morning, and on my return to the vessel I found that the captain had engaged another man as stoker. This I could not stand, for I consider that the captain has nothing whatever to do with the engine-room, where I am master, and I always engage my men myself. So I shoved this man off, like the other, and went myself to the owners of the ship to tell them what I had done. I found the captain at the office, and he flew into a towering rage when he heard that I had turned his man out of the ship. My reply was that I was master in the engine-room, and meant to remain so; that I was responsible for the men's work, and that I was consequently the proper one to choose them; that I would have no interference, and that if the power to choose and dismiss the stokers was not left with me, I would not put my foot in the vessel again. They fretted and fumed, but had to give way, for I was serious, and meant what I said; and ever since I have been master, and the captain does not try to interfere. You see, sir, I was right, and they

all knew it. I am not going to have a set of lazy Italian louts about me; they must do their work properly, or go about their business."

I have reproduced this little incident because it illustrates, as does the history of the engineer of the *Virgilio*, mentioned in a former chapter, some of the characteristic features of the Anglo-Saxon race. From the peer to the peasant we are all alike, all ready to go to any part of the habitable globe to better our social position, and we all show the same tendency to prefer the tangible to the ideal. In other words, as a race, we show a singular combination—a love for adventure and romance, and a keen appreciation of material advantage wherever it is to be found. Moreover, wherever we are we make ourselves happy and are contented, supported by an intense conviction of our superiority over all around us, and by a philosophical belief that it is our bounden duty to make ourselves as comfortable as is possible under the circumstances in which we are placed.

My new friend, having completed his breakfast, said he must go and look after his engines, and, descending the engine-room ladder, left me once more alone. By this time my fellow passengers had nearly all made their appearance, and were walking up and down the deck, in twos and threes, enjoying the pleasant fragrance of the early morn at sea. I was determined to bring my solitary condition to a close, so commenced looking around for "a future acquaintance."

Children and dogs are first-rate physiognomists. The former instinctively, as it were, find out who really like them, and do not hesitate to make the first advances. A lost dog will scan the features of those who pass him in the street, and having determined, in his inner mind, that he has found a benevolently inclined human being, will follow him pertinaciously to his home—an attention which I have always considered to be a great compliment, if paid to myself. When I am travelling alone I imitate both the children and the dogs. I scan the physiognomies of my fellow travellers, and when I have found one that is

"sympathetic" I make an advance, which I very seldom find repelled.

On the voyage from Genoa to Naples, I thus made a very agreeable acquaintance, that of an intellectual and refined gentleman, a coffee planter from Ceylon. His history quite corroborates what I have said of the go-ahead energy of the Anglo-Saxon race when speaking of my two engineer friends. Whilst at Oxford, a relation left him several coffee plantations in Ceylon. He put aside his classics, Homer and Horace, and went off to Ceylon to take possession of the newly acquired property. Once there he threw all his energies into the fresh career, so little consonant with former studies and occupations, and had, consequently, been very successful. He had passed many years in his new home, and merely left six months previous, to spend a winter in England, on health grounds. In a few years more he expected to have acquired a sufficient fortune to return for good to England, but in the meanwhile Ceylon was his home, his field of battle, and to Ceylon he was returning. Most Frenchmen would have sold the estates for what they would have fetched, and would have gone on with their home career, in "*La belle France,*" but such is not the Anglo-Saxon impulse.

We became great friends, and passed a few days together very agreeably at Naples. I shall not easily forget the pleasure with which he looked at a young oak in leaf at Capri. He had not, he said, seen an oak leaf for many years, for the oaks had lost their foliage when he reached England in the autumn. He left it to me to decide whether he should accompany me to Sicily, or go on to Rome. Having only ten days to spare, he could not do both, and I take great credit to myself for having sacrificed my own wishes to what I considered his advantage, in advising him to prefer the "eternal city." Thus it was that I was "alone" on the voyage to Palermo.

On this occasion four Germans, evidently travelling together, found favour in my eyes, and I at once broke the ice by a few trivial remarks on the weather, and on our favourable progress. I found them very pleasant,

amiable people, and we soon became quite friendly. One was professor of history in a German university, aad a few words about the Grecian antiquities of Sicily, about the Phœnicians, the predecessors of the Greeks, and their successors the Romans, Saracens, and Normans, were to his ears like the blast of a trumpet to a war-horse, rousing all his historical sympathies. Was he not going to Sicily with two of his student friends on purpose to study these very antiquities! The fourth was a young German Baron, very high and mighty, with a large carpet-bag quite covered with crowns and recondite armorial bearings. His father was a great man in Germany, the owner of a dozen estates, with innumerable quarterings of nobility, and the son was treated with much respect by his companions. The social state of Sicily, and that of its landed aristocracy, still rich and locally powerful, had as great a charm for him as had history and antiquity for the learned professor. Companions and friends thus secured, for the present at least, I was able to give my undivided attention to the fair island we were now fast approaching.

At a distance Sicily appeared to rise from the sea as a chain of low mountains, extending from west to east, but on a nearer approach the mountain chain gained in apparent elevation, and a wide bay, that of Palermo, opened out as we approached the land from the north-east. In the background of the bay a magnificent mountain amphitheatre rises majestically. This amphitheatre has a circuit of twenty-nine miles, and is limited by a bold range of limestone mountains which encircle it down to the sea, forming, by their last spurs or projections, Mount Pellegrino on the west, and Mount Catalfano on the east; they constitute the arms or limits of the bay itself.

The first mountain barrier that forms the amphitheatre is about three thousand feet high, but successive ridges rise above each other towards the south, until a height of six thousand feet is attained. It is to the fertile plain, encircled by this noble amphitheatre of mountains, that has been given, from time immemorial, the name of *Conca d'oro*, or the Golden Shell. The width of the bay itself,

from Mount Pellegrino to Mount Catalfano, is eight miles; following the course of the bay it is twelve miles.

The town of Palermo, lat. 38° 6′, population 219,000, is situated on the shore of the bay, at the junction of the western third with the eastern two-thirds. It is built on each side of a long and fine street, the Via Toledo, which, beginning at the marina or beach, ascends gently inland towards the mountains, so that the city forms a parallelogram, and is long and narrow as compared with its width. The port, which used to be much larger and deeper in former days, runs quite into the town. As it is too shallow now for large vessels, the latter anchor inside a mole or jetty, built outside the old port.

The view of Palermo as we approached, on a clear, fresh sunny spring morning, was really very beautiful. The grand range of mountains in the background, reaching the sea on each side of the bay, and all but encircling the vast and fertile plain, the large white city, with its numerous cathedrals and churches, shining in the southern sun, the wide tree-planted esplanade or marina, the deep blue water of the sea, all combine to create a scene of loveliness and grandeur which remains ever after engraved on the memory.

Nor was the favourable impression destroyed or weakened on landing. The shore, which is laid out as a promenade and drive, and planted with fine trees, just coming into leaf when we arrived, is bordered by handsome houses, among which is the famed Trinacria Hotel, one of the best in Italy. Ragusa, the landlord, lived long, in early days, with English noblemen, and knows the wants and requirements of our countrymen, which he does his best to meet and supply. The rooms are clean and well furnished, and the front ones have a fine view of the sea and bay, the one drawback being that they look direct north.

Once comfortably installed, my first thought was for the state of the vegetation. The principal motive of my visit to Sicily being to study the winter climate as demonstrated by the vegetable world, I was anxious not to lose a day in commencing the survey. I therefore drove at once to the Botanical Garden. After examining it carefully

I devoted the rest of the day, as also part of each day that I remained, to the study of the meteorological position, and of the vegetable productions of the plain that surrounds Palermo.

My intention being to compare the vegetation of the Riviera with that of Sicily at the same epoch of the year, I had carefully analysed it at Mentone and along the Riviera, when I left the one and passed through the other, on the 11th of April. I had also travelled rapidly in order that only a few days might elapse between the date of my departure and that of my arrival in Sicily, where I landed on the 17th.

The geological character of the soil is the same, calcareous in both regions. The great difference is that the Riviera is protected from the north by mountains, over which come dry, cold winds, and is open to the southern sun, and to the south winds after they have crossed the Mediterranean—whereas Palermo is exposed, without any protection whatever, to the north, north-east, and north-west winds, which must pass over the Mediterranean to reach it, the amphitheatre formed by the barrier of mountains opening out towards the north.

The result of this investigation was the conviction that the more southern latitude of Palermo, without mountain protection from the north, gives to it as warm a winter climate as the Riviera enjoys with protection from the north, but not a warmer one. The two regions seem to be singularly identical, considering the distance that separates them, as regards the character of their vegetation and its development, but their climates are very different in other respects. The situation of Palermo, in the southern part of the Mediterranean and on the north shore of Sicily, gives it necessarily a moist winter climate instead of a dry one like that of the Riviera. I will now explain the data on which these views are founded. Palermo being one of the most renowned health climates in the south of Europe every feature connected with it offers great interest.

In the open plain south of the town, with a thoroughly northern exposure, but sheltered to a certain extent by

the city itself, I found (April 17th) the same evergreen tree vegetation as in the more sheltered regions of the Riviera—large Lemon, Orange, and Carouba trees, growing freely and luxuriantly as timber trees. It was quite evident that in descending south I had reached a region where latitude alone gave the immunity from frost that on the Riviera is secured merely by sun exposure and exceptional shelter from the north, an immunity necessary to the well-being of these trees. Still, even here, the Lemon and Orange groves were at some distance from the sea, and occupied the more sun-exposed and sheltered points of the plain at the foot of the mountains; they were, moreover, all but invariably surrounded by high walls. These walls were destined, evidently, not only to protect the fruit and trees from spoliation, but also to shield them from the north or sea winds.

The deciduous trees were still behindhand, indeed scarcely as far advanced as I had left them on the Riviera six days previous. The Hawthorn had not blossomed, and the Fig, Mulberry, and Plane trees were only just beginning to show their leaves. Many deciduous trees peculiar to the south were totally devoid of leaves.

The Botanical Garden is only a hundred yards from the shore, on the east side of the city, and although it has no other protection from the north and from the sea breeze, than that afforded by a five-feet wall, the spring flower vegetation was in exactly the same state of advancement that I had left it in the most sheltered nooks of the Riviera, such as Monaco, Mentone, San Remo, and Alassio. At the same time these flowers were certainly neither more advanced nor more numerous.

Thus, I found in it, as also in the fine garden of the Princess Butera, and in several others which I visited, the following flowers in full bloom: Salvia, Iris, Rose, Bengal and Banksia, Wallflower, Anemone, Petunia, Verbena, Mignonette, Sunflower, Gladiolus, Spiræa, Nasturtium, Poppy, Marigold, Geranium, Candytuft, Hollyhock (three feet high, but not in blossom), Stock, Carnation, Tulip, Peony, Auricula, Cyclamen, Eschscholtzia, Judas tree, Chestnut tree, Elder tree, Hawthorn (about to blossom),

Alyssum, shrubby Euphorbias, Jasminum revolutum, Nettles, and Asphodel. All these flowers, shrubs, and trees I had left equally advanced and flourishing six days previously on the Riviera.

Peaches were set as large as small walnuts, Strawberries were served in profusion at every meal at the hotel. Oranges were numerous and first-rate, sweet and juicy. I may here mention that throughout Sicily it is the custom to eat strawberries along with sugar and the juice of an orange or two. The strawberries, what we should call wild or mountain strawberries, come to table without their stalks, are crushed with white pounded sugar, and the juice of an orange is squeezed over them. The result is a most fragrant and agreeable compound, much superior, in my opinion, to strawberries and cream. Indeed, I think it is all but worth while to make a journey to Sicily to be initiated into this mode of eating strawberries.

The flowers above named are those that bloom in our climate between April and the early part of July. Some, the early kinds, such as Anemones, were going off; others, and principally our June flowers, were in full luxuriance. This advanced condition of spring and early summer flower vegetation, and the rather late and retarded state of the deciduous tree vegetation, indicate the warm days and rather cold nights, without absolute frost, that characterize, in winter, the protected regions of the south of Europe. The sun is ardent, and warms the surface of the soil, but the nights are cool, not to say cold, and the sun-heat does not penetrate deep enough into the earth to reach the roots of the trees until the spring be far advanced.

The Botanical Garden itself, at Palermo, although interesting, was in rather a neglected state, and showed the want of energetic modern direction. The plants were still classified according to the Linnæan system, as at the beginning of this century. All the trees, shrubs, and plants in the ground were unlabelled, and part only of those in pots were so honoured. Many of the labels themselves were illegible from rust and time. Indeed, the garden struck me as being in a great measure left to common gardeners, and wanting the direction of a scientific modern botanist.

On surveying narrowly the shore and the sides of the mountains, I was struck by the absence of the scarred, water-worn ravines which are seen at every mile along the Riviera, or along the sides and at the foot of the Apennines, and which are the evidence, in stones, of the tropical rains of these regions. Moreover, the sides of the western sun-exposed mountains were clothed with verdure from their base to their summit, more like the basaltic hills of the west coast of Scotland than the sunburnt, naked summits of the Riviera mountains, the geological formation being in both cases the same, calcareous.

To my now rather experienced eye the verdure of the mountain sides, and the absence of water-worn ravines, indicate a moister climate than that of the Riviera, and betoken rain falling oftener and less abruptly. On inquiry from Dr. Moscuzza, a leading physician of Palermo, and a very enlightened, experienced man, and on consulting Professor Scina's valuable work on the meteorology and climate of Palermo ("La Topografia di Palermo e de' suoi Contorni, 1818") which Dr. Moscuzza gave me, I found that such is really the case, that the winter climate of Palermo is mild, but damp and moist.

At Palermo, according to Professor Scina, there are 131 days in which rain falls, and these rainy days are principally in the winter. At Malaga there are only 40, at Nice 60, at Mentone 80, and even in London only 145. Yet only 21 inches of rain fall at Palermo, which is about the average of London; that of Nice being 25, that of Algiers 36. These facts prove that the rain must be more continued, more mizzling, more like that of the northern regions of Europe, than is the case on the north shore of the Mediterranean.

The greater rainfall at Palermo, as compared with that of the northern shore of the Mediterranean, and the moist character of its winter climate, are explained by its geographical position. The north-east and north-west winds, which principally reign in winter, have had their moisture precipitated before they reach the Mediterranean by the snow-covered mountains of the south of Europe—of Italy, of Corsica, Sardinia, and Spain. The moisture

which they contain when they reach Sicily is merely what they have picked up on their subsequent passage over a portion of the Mediterranean. Again, the first ridge of the mountains which form the Palermo amphitheatre not being very high, nor their temperature very low, owing to the latitude, a part only of this moisture is there condensed and gently precipitated. As the northern winds, which bring these mild rains, have crossed in winter, as we have seen, the snow-clad summits of the Apennines, Alps, and Pyrenees, and of the mountain ridges of Spain, of Corsica, and of Sardinia, they would be much colder were they not warmed by passing over a track of warm sea.

The above facts clearly point out the character of the winter climate of Palermo. It cannot be very cold—indeed, it can scarcely ever freeze, as the Lemon-tree thrives, becoming a large tree, in the open air, and a few degrees of frost kill it. The nights, however, being cool from December to April, and the sun-heat being considerable, the daily transition of temperature must be marked, as on the Riviera. But instead of being dry and bracing, as is the climate of the north Mediterranean coast, the climate of Palermo must be rather moist and relaxing. On referring to Professor Scina's work, I find these deductions thoroughly carried out by the data he advances.

The mean winter temperature of Palermo, like that of Naples, is higher by some degrees than that of the Riviera. I presume that in both localities this fact is owing to the greater heat of the day, and to the lesser cold of the night. Moist nights are always warmer than dry clear nights with north winds; it is partly due, also, to the occasional prevalence of the scirocco, or south-east wind from the African desert. This wind always greatly raises the temperature everywhere while it lasts, and is a source of much discomfort and distress to the entire community, to the sound as well as to the unsound. Indeed, the increasing heat and the more pernicious character of this African wind, as we go south, in the western regions of the Mediterranean, to a certain extent counterbalance the advantages which may be gained in other respects.

Such a winter climate—temperate, sunny, and rather moist—may be beneficial to a certain class of patients, to highly nervous, excitable, impressionable constitutions, too much braced and stimulated by the dry tonic atmosphere of the Riviera, and with whom the bracing, stimulating climate of Cannes, Nice, Mentone, or of the east coast of Spain, does not agree. But I do not think it possibly can be as beneficial to those who require invigorating and vitalizing, to those who are suffering, like the phthisical, from defective nutrition and lowered vitality. In the earlier and curable stages of phthisis I am persuaded that the dry invigorating climate of the Riviera, or of eastern Spain, is far preferable in the great majority of cases.

I should, however, be inclined to advise a trial of the climate of Palermo, in preference to the north or east coast of the Mediterranean, in severe cases of spasmodic intermittent neuralgia, in spasmodic idiopathic asthma, and in cases of phthisis accompanied by much nervous irritability, or by a constant tendency to hæmorrhage. These are the forms of disease that do not appear to do well with us on the Riviera; and if the cause is the dry, and to them the exciting, character of the climate, it stands to reason that an equally mild and a more moist atmosphere may be what they require. The winter climate of Palermo appears to hold a medium position between that of Pau and that of Madeira. It is much warmer than Pau, and much colder than Madeira—at least, the nights are much colder.

From what precedes it is evident that the climate of Palermo cannot take the place of that of the Genoese Riviera, and that it is not as suited to the common run of consumptive cases. At the same time it is equally clear that there are some forms of disease in which it is specially indicated, and in which it may be of great use, and that more especially when the Riviera fails to afford relief.

Palermo is by far the largest and the most interesting city in Sicily. The beauty of the amphitheatre in which it is situated, and the shelter afforded by its port, larger and better in olden times than now, have always made it an important and favourite city. When the Greeks, the Carthaginians, and the Romans successively occupied Sicily,

Palermo, however, did not enjoy the same amount of prosperity that it subsequently attained during the reign of the Saracens and of the Norman kings, and, later still, under the Spanish and Neapolitan kings and viceroys. It was the capital of Sicily during the sway of these successive dynasties, and is replete with the vestiges of their dominion. The older churches and palaces—indeed, nearly all the remains of antiquity—date from Saracenic and Norman periods. Many of them are very interesting specimens of the Norman architecture of that day, modified by contact with the Saracenic, Byzantine, and Greek styles, which were in the ascendant when the Normans conquered Sicily. The magnificent cathedral of Monreale is the finest example extant of this blended, or Siculo-Norman style of architecture, as it has been called.

Sicily, the largest and most fertile island in the Mediterranean, has, like Corsica, been the prey, the battle-field, of the various powers that have reigned in the Mediterranean during historic times. But unlike Corsica, although mountainous, it has no primeval forests, no inaccessible snow-clad mountains, in which its population could take refuge when sorely pressed, and perhaps not such a warlike population, so that it was always eventually conquered. The Greeks colonized it seven centuries before Christ, and built many splendid towns on its southern and eastern shores, those nearest to Greece. It is on these shores, at Syracuse, Agrigentum, Selinus, Segesta, and elsewhere, that are to be seen to this day remains of Grecian temples as numerous and almost as splendid as those to be found in Greece proper. These prosperous communities excited the envy and cupidity of the Carthaginians, the site of whose empire, on the opposite African coast, was too near for their safety. They were attacked and conquered, but their conquerors soon fell before the Romans in the Punic wars, and Sicily remained long a part of the Roman empire. After the fall of Rome Sicily became subject, successively, to the Vandals, to the Byzantines, and to the Saracens, always falling into the hands of the strongest. The Normans at the time of the Crusades drove the Saracens out of

the island and established the Norman dynasty. Then comes an interminable array of kings and viceroys belonging to the imperial house of Germany, to the houses of Anjou, of Aragon, of Savoy, of Austria, of Spain, of Naples, ending in *Italia Unita*, under the "Re galantuomo," Victor Emmanuel, with a more glorious prospect for the future than ever.

Poor Sicily! The list of its conquerors and governors is perfectly oppressive to the imagination. It must indeed be a beautiful and fertile country to have been worth so much contention in past times. In the days of imperial Rome it was often called the granary of the empire, and is still one of the most fertile and most favoured spots in the Mediterranean. Under good government it will, no doubt, in the course of time, arrive at a state of prosperity of which its present inhabitants have no conception. It has within itself all the elements of fertility which made it rich and populous in the days of Greece and Rome—a mild, beautiful climate, a fertile soil, a splendid position.

The town of Palermo is very regularly built; the streets are wider, handsomer, and cleaner than those of any town that I have visited in the south of Europe. In addition to the Via Toledo, which passes through the centre from north to south, dividing the city into two parts, there is another street, equally fine, the "Strada-nuova," which passes through it at right angles to the former, from west to east. These two large streets add greatly to the beauty of Palermo, and make it easy to find one's way anywhere. There is a Moorish character about the architecture even of the private houses that gives a great charm to the place, and many of the shops are very good.

The Via Toledo is continued by a road which, emerging from the southern extremity of the town, gently ascends the plain for four miles, when it reaches the suburban town of Monreale, celebrated for its beautiful Siculo-Norman cathedral, and often the suburban residence of the Norman kings, and of the Spanish viceroys. Monreale being nearly two thousand feet above the level of the sea, is cooler than Palermo in summer. The views too, on all sides, are very

eautiful. This road, and those along the shore towards Monte Pellegrino and Monte Catalfano, are the favourite drives of the Palermitans.

The road to Monreale is peculiarly picturesque, owing to the magnificent scenery of the mountain amphitheatre, which becomes more and more beautiful as we recede from the sea, and owing to the extreme luxuriance of the gently rising plain on each side. It is the same vegetation that we see at Mentone, and in the more sheltered parts of the Riviera, but spread out in a wide garden plain, instead of occupying a seaside ledge under high mountains. Groves of Lemon and Orange trees, interspersed with large stately Caroubas and old Olive trees, and thickets of Aloes and Prickly-pears, are traversed. The ground, too, when I saw it, was one carpet of wild flowers.

The town of Monreale is of considerable size (population 15,000). It has grouped itself round the grand cathedral, built by one of the early Norman kings in the year 1182. The Normans found Saracenic, Roman, and Greek workmen and architects in Sicily, and the churches and palaces they built exemplify a singular but very beautiful mixture of all these styles of architecture. They borrowed a peculiar form of pointed arch, with profuse ornamentation, from the Saracens and Moors, apses from the Romans, mouldings with ornamented capitals from the Greeks, and mosaics from the Byzantines. And yet it is from this mixture of so many forms of architecture that issued the very beautiful style, so peculiarly their own, to which the term Siculo-Norman is given. The mosaics are peculiarly rich in the Monreale cathedral; they cover more than 80,000 square feet.

There is a Benedictine monastery adjoining the cathedral, founded at the same epoch, which contains some valuable and interesting pictures, and a mosaic ornamented cloister, well worth visiting. Connected with it is a seminary for the education of young priests. The great Sicilian families still, as in former days, send their younger sons and their daughters to convents, in order to accumulate the property in the hands of the head of the house; it is the easiest and cheapest mode of providing for them.

In the garden of the monastery I saw many fine-looking boys, from ten to sixteen, in the priest's gown. They were priests in embryo, not through their own will, or from religious vocation, but by their parents' decree. I could not help pitying the poor boys, thus condemned in childhood to a life which later might possibly prove a bitter penance. There are also many convents for women both at Palermo and Monreale, cages for poor fluttering human birds. If a sincere religious vocation drives a man or a woman in the maturity of their intellect to a cloister, it may be respected; but it is very odious to thus imprison and bind for life mere children.

Although there are roads in the interior of the island, there are so few travellers that it is not thought worth while to prepare for them, so the inns are mere wine-shops for the muleteers, very miserable and dirty, without resources. The plan, therefore, for travellers who wish to visit the antiquities, and the interior and southern coast of the island, is to charter a vetturino carriage, and to stock it with eatables, as a yacht would be stocked for a cruise. Being most desirous to see all there was to be seen in Sicily, I and my German friends, who proved very agreeable companions, agreed to travel together, and with the assistance of our host made all the necessary preparations. As a preliminary precaution, I called on the English consul, who is also the banker, to exchange gold for a letter of credit, but from him I received the urgent advice not to venture into the interior. He told me that a few weeks before a numerous band of convicts had escaped from the pontoons at Girgenti, and taken refuge in the very mountains that were on our path. If we started, we ran a very fair chance of being taken possession of and detained for a ransom.

As I have arrived at an age when, generally speaking, "discretion tempers valour," much to my regret I gave up the intended excursion, as did the German Baron. The professor and his pupils, however, were much too enthusiastic to be arrested by such trifles, and started alone. As for us, with the mental resolve to return at some more peaceable time, we took our places on board

the French Alexandria steamer for Messina. She came in that evening direct from Marseilles and proved a splendid boat. We slept well on board, and the next morning, when we awoke and got on deck, found ourselves steaming into the port of Messina.

The view of Messina, of the Straits, and of the adjoining mountains, on entering from the Tyrrhenian sea, is perfectly enchanting, and so different from anything seen before that it rivets all the faculties. On a calm, fine morning, such as we were favoured with, the Straits, being only a few miles across, look like an inland lake. On the right is a large handsome town, occupying a semicircle at the foot of high and tree-clad hills; on the left, or east, rise abruptly from the sea a series of magnificent mountain ridges, which rapidly attain an elevation of seven thousand feet. Their rocky flanks, which present little perceptible vegetation, all but glisten in the brilliant sunshine, whilst their summits are covered with sheets of snow (April 25). Here and there, clinging as it were to the side of the mountain, are numerous villages and towns, with their tall churches and campanili, telling of hidden fertile valleys, and of terrace cultivation, imperceptible at a distance. To the south, above all, towers the snow-covered summit of Mount Etna, although fifty miles distant.

The port of Messina, probably the best in the Mediterranean, is one of the wonders of that sea. It is a vast abyss or chasm, produced by an earthquake, or volcano, four hundred and twenty feet deep at the entrance, filled by the sea, and all but closed towards the Straits by a narrow sickle-like promontory. Indeed the port is so sheltered that most of the numerous vessels it contains lie quietly, merely moored to the quays, without anchoring, which they could scarcely do in such deep waters. So thoroughly does the promontory which all but encircles the port towards the sea imitate the form of the reaper's hook, one of the oldest agricultural implements, that the ancient name of Messina was *Zancle*, which means sickle in the primitive Sicilian language.

Messina was one of the earliest of the colonies founded

by the Greeks in Sicily, and in successive ages followed the fortunes of the island in all their varied phases. The importance of the situation of Messina at the entrance of the Straits which, in all historic times, have been the high road between the east and the west of the Mediterranean, and the great security offered by its port, have been permanent sources of disaster as well as of prosperity. It has nearly always been the first town attacked and besieged, and often the last retained by the different nations that have conquered Sicily.

In addition to sieges without number, Messina has also had to withstand the assaults of nature's mysterious agencies; for it has been repeatedly all but destroyed by earthquakes. Lying on the line between Vesuvius and Etna, it has ever been, and must remain, liable to these terrestrial convulsions. The two volcanoes are no doubt connected subterraneously, and are the result of the same agencies, a fact long recognised by geologists. The activity of the one has generally coincided with the quiescence of the other, and *vice versâ*. For more than a thousand years after the destruction of Pompeii, Vesuvius remained quiet, and during that time Etna was active; now when Vesuvius is active, Etna generally remains all but quiescent, and *vice versâ*. When both are quiescent there is danger, and then woe betide the towns that, like Messina and Catania, are living on or near the volcano. The last serious earthquake that occurred was in 1783; it destroyed the greater part of the town, and many thousands of its inhabitants.

The combined influence of these two causes of devastation, war and earthquakes, has made Messina a modern city. It has been so often all but destroyed, all but razed to the earth by the one or the other, that it has very few antiquities; most of the buildings are modern, or comparatively modern. Facing the sea, on the western side of the port, there is a row of good stone-built houses, a mile and a half in length, forming a wide crescent, which adds greatly to the beauty of Messina. These houses, at a distance, look like one long and handsome palace. Eighteen streets pass through wide arcades in the

basement of the houses on to the marina or port, without breaking its symmetry, or, rather its uniformity.

To the north of the town a low neck of land, a kind of sandy promontory, advances into the sea towards the mainland, until it reaches within two miles of the latter, and thus forms the north-eastern or Sicilian entrance to the Straits. This is the well-known Cape Pelorus of the ancients. At its point is a village named Faro, from the Greek Pharos, lighthouse, and a tower, the Torre di Faro. This tower long served both as a fort and as a lighthouse, but now is only used in the latter capacity. The ancients believed that Sicily was formerly a part of Italy, and was torn from it by a convulsion of nature, as shown by the verses from Virgil's "Æneid," at the head of this chapter. Modern geologists do not accept this view.

The road from Messina to Faro skirts the shore, and is very fertile and pretty, passing as it does through groves of Olive and Orange trees, with frequent glimpses of the blue sea, and of the grand Calabrian mountains. The distance from Messina is about eight miles, and this drive is not only the pleasantest, but the most fashionable.

The distance from the Faro tower to the mainland is so short that on a calm night the crowing of the cocks and the barking of the dogs on the Calabrian coast is distinctly heard. It is stated in history that it was the Messinians who first summoned Count Roger de Hauteville, the Norman Baron, to defend them against the Saracens, and that he and his followers crossed the Straits in boats (1072), swimming their horses by their side. In recent times, Garibaldi crossed from Sicily to the mainland with the remains of his "one thousand" in boats, and it was on the mountain of Aspromonte opposite that he was wounded and taken by the royal troops.

It is in these Straits that are situated the famed whirlpools of Charybdis, so dreaded by the ancients, and the horrible rock of Scylla, with its summit in the clouds, amid eternal tempests, inaccessible to man, and its base deep in the sea among ravenous sea monsters. Admiral Smyth, who surveyed this region, finds very little foundation for those poetical fancies of Homer, and of subsequent classical

writers. They certainly were not the greatest dangers poor Ulysses had to encounter in his wanderings.

The rock of Scylla, says the Admiral, is merely a water-worn rock, like any other, on the Calabrian coast, opposite Faro, surmounted by an old castle. The whirlpool of Charybdis, by the Sicilians called "garofalo," exists near the entrance of the Messina harbour, but in such a form as to be only dangerous to small craft in the hands of inexperienced mariners. To the undecked vessels of the Rhegians, Zanclians, and Greeks, it may have been formidable, for Admiral Smyth has seen a man-of-war whirled round on its surface. It is, apparently, the result of a conflict between a harbour current with the main or tidal currents which set up and down the Straits.

What are much more dangerous to the small vessels that navigate these regions, are the sudden gusts of wind that often come down the *fiumare*, or dry torrent beds of the adjoining mountains, with all but irresistible impetuosity, and capsize vessels unprepared for them. Admiral Smyth says, that he saw thus overtaken and capsized a fine barge, with eighteen first-rate sailors and an experienced officer, who all perished. The barge, which had been on duty with the Sicilian flotilla for years, had been taking a German Princess on board a vessel bound to Palermo. On its return it was seized by so sudden a squall that they could not lower the mainsail, and she instantly capsized. The bodies were picked up the next day, thirty miles to the south, near Taormina. In Messina, there has been found a Greek inscription to the memory of thirty-seven youths of Cyprus, who lost their lives near the Faro by a similar disaster. The inscription says, that as many statues, sculptured by Calion, were erected to their memory. Thus were the fine arts honoured and supported by the ancient Greeks, and made subservient to the affections; but in our day, we perhaps do better. We do not raise statues to the memory of youths who are accidentally drowned, but we not unfrequently think of and look after their mothers and wives.

Messina is the great central rendezvous of the steamers

that navigate the eastern waters of the Mediterranean, and a very flourishing city. It is the principal commercial port of Sicily, the main outlet for the north-eastern part of the island, and exports immense quantities of oranges and lemons, and a considerable amount of corn, silk, sulphur, and wine. Although a very beautifully situated commercial emporium, it did not, however, strike me as ever likely to become a winter sanitarium.

The Calabrian mountains rapidly recede to the south-east, so that half-a-dozen miles below Messina the Straits are already twelve miles across. Thus Messina receives the south-east sun in full, and is protected by mountains from the north-west. But then, immediately in front, to the east and north-east, there are the high snow-covered Calabrian mountains. In winter the north-east winds must be very cold, and there must constantly be a cold down-draught at night.

The city of Messina, and its northern and western suburbs, show this influence; there is all but a complete absence of the southern vegetation of Palermo. The hills are covered with Fir and small Olive trees, and the Orange and Lemon trees disappear, or are only observed in sheltered corners. The Fig trees were only beginning to show their leaves, the Vines were merely sprouting, and there were very few flowers in bloom to be seen. Indeed, the proximity of the cold Calabrian mountains appeared to have brought the northern suburbs and the city of Messina, which are in the same latitude as Palermo, nearly to the level of Marseilles.

The mountains, at the foot of which Messina is situated, are part of a huge sedimentary or Neptunian chain that runs right through the island from east to west, along the north coast. These mountains, of calcareous formation, extend southwards along the east coast for thirty miles, as far as Taormina, just as the Maritime Alps run along the Riviera or Genoa coast, having also a sheltered under-cliff, smiling and luxuriant. The coast itself dips to the south-west, as will be seen by looking at the map of Sicily. On the other side of the Straits the Calabrian

mountains rapidly lose their great altitude, and expire at the end of the Italian mainland, some fifteen miles below Messina.

Owing to the above physical condition, a decided undercliff or Riviera commences at the south suburbs of Messina, protected from the north and north-west by the coast chain, and gradually less and less exposed to the north-east as it descends southwards. Under these influences of protection, and of exposure to the south-east sun, a wonderful change takes place. Nature bursts into extreme southern luxuriance; not so much on the advanced or more exposed headlands, which still catch the north-east wind, as in the intervening bays or sheltered ravines. Here vegetation at once assumes a very advanced southern character. Stately Orange trees, sometimes as large as moderate-sized Oaks, and Lemon trees overtopping two-storied houses become common. I saw Oleander trees thirty feet high; the white Mulberry and the Almond trees were in full leaf, and the latter had fruit full size, evidently stoning; Fig trees were in leaf, and the fruit large; the Vines had made shoots four or five feet long. What is called the black Mulberry tree was still all but leafless, as at Palermo, only a few buds and terminal leaves appearing. Few if any cultivated flowers were to be seen, with the exception of Carnations in full bloom in pots or vases on the balconies which most houses of any pretention possess. Wild flowers were numerous in orchards and fields, and prominent among them the Gladiolus, which was growing in great profusion. Barley and Oats were in the ear, and Wheat was some two feet high; indeed, spring vegetation was certainly more advanced than I had seen it in any other part of Sicily. The name given to a village in the more southern portion of this region, *Giardini* (gardens), implies the recognition in former days, as well as now, of exceptional fertility. The physical conditions are the same as those of the Genoa Riviera, but this undercliff is five degrees further south, and no doubt enjoys a still warmer summer sunshine. Were Messina or Catania situated in this region they would truly be exceptionally favourable

winter stations, but unfortunately they are not sheltered from the north-east.

In the midst of this exuberant fertility there is a numerous population, which appeared very poor, squalid, and badly fed. The inhabitants live in large, dirty, decayed villages, in which it would be all but impossible to make even a temporary settlement; although everywhere the scenery is glorious—rocks, torrents, beautiful bays and promontories. The men are better looking than the women, who seem to have even the beauty of youth ground out of them by work, insufficient food, and exposure to the sun. They wear no covering on their heads, except occasionally a handkerchief thrown over the back part. To screen the eyes from the ardent sun, therefore, they contract a habit of frowning, which impresses premature wrinkles on the youngest brow. Thus the girl of fifteen appears twenty, the woman of twenty, thirty, the one of thirty, fifty, and the one of fifty a hundred.

About thirty miles from Messina the mountain chain leaves the coast and takes an inland or westerly direction, skirting for some distance the northern foot of the Etna. Although the undercliff ceases with the town of Taormina and the village of Giardini, its protection, and that of the mountains trending west, are still felt, and a region of exuberant fertility meets the traveller for some miles further on to the south.

The town of Taormina contains numerous antiquities which are well deserving of examination. The most interesting is the remains of a Greco-Roman theatre, the largest in Sicily, and one of the best preserved in Europe. It was made to contain forty thousand persons in the days when Taormina was a great city, four miles in circumference. The ancient Tauromínium was founded 358 B.C., by the scattered descendants of the inhabitants of the neighbouring city of Naxos, razed, and totally destroyed by Dionysius of Syracuse, 403 B.C. The Naxians had incurred the animosity of the tyrant of Syracuse by allying themselves to Athens in her wars with that city, and by giving winter quarters to the Athenian general Nicias previous to his siege of Syracuse 415-414 B.C.

Naxos was the first colony made by the Greeks in Sicily, 735 B.C., and was founded one year before Syracuse. It was built on the promontory called Capo Schiso, a few miles beyond Giardini, on an ancient lava stream. No trace of it now remains.

Beyond Giardini begins the domain of the king of European volcanoes, Mount Etna. No better view of Mount Etna can be obtained than from this part of the road from Messina to Catania. For thirty miles it skirts the eastern or sea base, the entire circumference of the base of Mount Etna being 120 miles. Thus does the traveller become gradually impressed with the real grandeur of this magnificent mountain. At first it is difficult to believe that it is nearly 11,000 feet high. The rise to the plain at the summit, from which issues the final cone, is so gradual, and the summit plain itself extends over such an extensive area—many miles from north to south—that the great volcano looks more like a snow-covered ridge than a single mountain. The snow at this time of the year covers at least the upper third of the huge mountain—a vast superfices.

The moment Giardini is left the scene changes. The soil is merely decomposed lava, a mixture of large masses, like scoriæ or slag from a manufactory, of smaller pieces like cinders, and of a brownish black earth like ashes. The more ancient currents of lava seem to be gradually resolved into these elements. When cultivation commences the large masses are dug up and piled for walls, the small ones are used to Macadamize the roads, and the ash-like dust constitutes the soil; and very fertile soil it appears to be, merely requiring water to produce anything that is sown.

The southern character of the vegetation recedes under the cooling influence of the vast snow-covered plains of Mount Etna. The Fig trees have only terminal leaves, and the fruit is very small; the white Mulberry trees and Vines have also only a few leaves; the black Mulberry trees are mere sticks, scarcely having their buds formed. Lemon and Orange trees still appear, but only in sheltered valleys and depressions, and are often protected by high walls; neither are they as large, as vigorous, as tree-like. The Olive tree, however, holds his own, as also do the Opuntiæ

or Barbary figs. The latter are extensively cultivated throughout Sicily as hedges, and for the sake of their fruit. They grow to the height of some twelve or fifteen feet, in a very singular grotesque manner, and assert their claim to being dicotyledonous plants by becoming regular trees, with a large round trunk and bark. This transformation of the flat, fleshy, leaf-shaped branches is quite remarkable.

The geologically celebrated Val del Bove, with its dikes, is seen at a distance, a wide and long chasm on the flanks of the mountain; also the Oak and Chestnut forests below the snow line, which appear as mere black patches. As we approach Catania the very peculiar grim, coal-mouth character of the region becomes more and more apparent. The walls on the roadside and in the fields, and the out-houses are all made of clinkers, the road of cinders, the soil of ashes. Vineyards are numerous; the Vines—indeed, nearly all plants in Sicily—are planted in the fields between ridges or pyramids of the loose black soil, some eighteen inches high, in order to retain moisture. Even wheat is planted in this way in tufts at the bottom of furrows, and between ridges. In flower gardens the same system is followed.

This soil, formed of decomposed lava, appears to contain all the elements of nutrition required for vegetation; everything seeming to flourish and thrive in it, provided there be water. The ground vegetation shows less difference than that of the trees. Beans and Peas are ripe, and Vetches in full blossom. Lupins, white and blue, are very abundant, and are extensively cultivated as fodder for cattle. The Hellebore is in flower, and very common; Almond trees are in full leaf, and the fruit natural size; white and red Convolvulus and scarlet Poppies are abundant. Occasionally, near water, are Poplars in full leaf; in the same situations, Cannas have new shoots, three or four feet long. They grow to twenty feet or more, and are much used for light fencing, as supports to Vines, and for a variety of similar purposes. Pomegranate trees are often seen from ten to twenty feet in height.

Giardini is thirty-four miles from Messina, and thirty-two from Catania. The road for these thirty-two miles skirts the base of Mount Etna, and is everywhere cut

through lava in different stages of decay and disintegration, according to the time that has elapsed since the eruption to which it owes its origin. Indeed, the soil is entirely volcanic. Generally speaking the older the lava the greater the disintegration, and the easier it is to bring it into cultivation, but this rule is not without exception. Some comparatively recent streams of lava have long been cultivated, whereas others that have been thrown out before our era are nearly as sterile as at first. Within the last few miles of Catania, where the separation of the clinkers, cinders, and soil has not been made, rivers of lava are crossed, lying in masses, in mounds, in sheets, in plains, and producing little else but Crassulaceæ. The fertility of the lava is evidently the result of human labour combined with artificial irrigation, brought to bear on it when decayed by atmospheric influences and by time.

This entire coast possesses a kind of strange fascination. On the one side is the blue sea that separates us from Greece, on the other the immense mass of the great volcano, towering into the sky between two and three miles above the sea-level. Grim as the landscape appears with its lava-dust soil, only here and there concealed by a sparse vegetation, it is viewed with intense interest. On every side is the evidence of innumerable eruptions, that have given birth to innumerable streams of lava, both in historic and pre-historic times. In some localities these lava rivers have evidently flowed into the sea, filled up its depths, and pushed back its shores for miles. In others, as at Aci Reale, the lava cliff, six hundred feet high, has clearly been partly formed by an uprising of the coast and of lava streams previously deposited in deep waters. In these cliffs are to be found many caves, into some of which the sea dashes with mysterious, unearthly sounds in stormy weather. Basaltic columns are also to be seen, nearly as curious and as perfect as those of the Giant's Causeway in Ireland, or of Fingal's Cave in Scotland.

It is in this region, and in that of Etna in general, that the ancients placed the earliest events of their mythology. Sicily itself was dedicated to Ceres, the goddess of agriculture. Jupiter reigned on Mount Etna, and it was under

its mass that he placed the revolted Titan Enceladus. The convulsive movements of the crushed Titan were the cause of its eruptions. It was in the fertile plains of Enna, at the western base of Etna, that Proserpine was plucking flowers when Pluto carried her off. It was in the same plains that lived Daphnis, the son of Mercury, who invented pastoral poetry to please Diana, the great huntress.

The Cyclop Polyphemus lived in one of the lava caverns on the coast, and there pursued with his love the nymph Galatea, who preferred the shepherd Acis. Polyphemus, in his rage, threw a rock at his unfortunate rival, and thus destroyed him. Acis was changed by the gods into a river, and this river still runs through the town of Aci, named after Galatea's lover.

It was in a port on this coast, choked by a lava stream in the Middle Ages, that Ulysses took refuge, and fell into the hands of the same Polyphemus—

> "Portus ab accessu ventorum immotus, et ingens
> Ipse; sed horrificis juxta tonat Ætna ruinis."—Æn. iii.

In the sea near Aci, are seven lava or trap islets, remarkable for the numerous basaltic columns they present. These islets were believed by the ancients to be the very rocks thrown by Polyphemus after Ulysses and his companions, after they had escaped from his cave. They bear to this day the name of *Scogli dei Ciclopi*, rocks of the Cyclops.

Catania is a large and rather handsome town of eighty-four thousand inhabitants, situated at the very foot of Mount Etna, where the sea approaches the nearest to the base of the great volcano. It is all but encircled by arms or rivers of lava. At the memorable eruption of 1669 a stream of lava, a mile wide, reached the walls of the town; then it divided and swept into the sea on both sides of the city, not without destroying part of it. The lava, where it reached the sea just two centuries ago, still looks as if it had only been emitted last year. It is piled on the shore in heaps, like thousands of tons of coal, and gives a very grim, coalpit-mouth appearance to the immediate vicinity of the town.

Catania (*κατ' Αἴτνης*, under Etna) was one of the earliest

of the Greek colonies, having been founded probably about 730 B.C. It soon attained great wealth and prosperity, with a numerous population, owing, no doubt, to its proximity to Greece, and to its being the natural port of the rich and populous district of lower Etna and of the surrounding plains. Although many times destroyed by the sword, and even more frequently still by the eruptions of its friend and enemy, Mount Etna, and by the earthquakes that so often precede and follow them, Catania has always been rebuilt, to recommence its career of prosperity. In modern times the most complete destruction was that commenced by the eruption of 1669, which overwhelmed part of the town. The ruin was all but completed by the earthquake of 1683, which scarcely left any houses standing, and buried fifteen thousand persons.

This time the town was rebuilt with architectural method and precision. More peaceful times had arrived; the necessity of cramping the city between narrow walls had ceased, and Catania was rebuilt with, for the south, wide, handsome streets. Hence the modern appearance that it presents. It is said that this open style of architecture, although pleasant in winter, and at all times healthier, makes it insufferably hot in summer, the more so as the streets nearly all run regularly north and south, east and west. From its south-east exposure Catania is much warmer in summer than Palermo, which has the benefit of the north sea winds. The maximum heat at Palermo in summer averages 86° Fah., whereas at Catania it averages 95°. At Mentone the maximum only reaches 81°, less than in London or Paris.

Catania is the residence of many of the Sicilian aristocracy, some of whom are men of considerable wealth, even according to our ideas. As they travel, and often reside a part of the year abroad, they attain a high degree of intellectual cultivation, which makes their society, I have been told, very agreeable for those who are admitted into the inner circle. There is, also, an appearance of life and animation about the city which must contribute to make it an agreeable residence even to strangers.

In former times, in the days of the Greeks, Syracusans, and Romans, property was much divided in Sicily, and agriculture flourished more than in any part of Europe.

Hieron of Syracuse published an agrarian code, which was considered so perfect by the Romans that they adopted it. During the dominion of the latter, Sicily was so fertile, and so very productive in cereals, that it became the granary of Rome. The Saracens still further promoted agricultural progress by introducing an improved system of irrigation and various new species of culture. The conquest of Sicily by the Normans had a disastrous result. They introduced the feudal system, all but dividing the island between powerful barons and ecclesiastical corporations, often non-residents. A large amount of land fell out of cultivation, and as subsequent governments have, until the recent fall of the Bourbons, encouraged this social condition, agriculture has never been able to recover itself, or at least to resume its former position. Even now, many of the large proprietors let their estates in the block to middle-men, who let and sub-let until the last tenant is ground to the earth.

In such a climate, and with such a soil, however, progress is sure to follow enlightenment, and the regeneration of Italy will extend by degrees to Sicily. No doubt the increased facility of communication which steam affords, and the propagation of the doctrines of free trade, will gradually work great changes in the ideas, both of the territorial aristocracy and of the nation at large.

Mount Etna, called Mongibello, or mountain of mountains, by the modern Sicilians, does not overshadow the town, although the latter lies at its foot. The ascent is so gentle, on this, the south side, that it is twenty-nine miles from Catania to the summit. On the north side, where the slope is much more abrupt, there are points where the ascent is only twelve miles. This slope is divided into three regions: the cultivated region, *pie di montana*, or *colta*, which extends about ten miles, and is the fertile region; the woody region, *regione nemorosa*, or *bosco*, which extends some six or eight miles in width; and the desert region, *regione diserta*, which commences, according to Admiral Smyth, at a little above six thousand feet, and extends to 10,874, the height of the centre cone of Etna, according to the measurements of the same

authority. In winter the two upper regions are covered with snow, which must exercise a marked influence on the climate of Catania, and of the plains which surround the base of the mountain.

I arrived at Catania at the end of April, and carefully examined the vegetation with reference to climate, as I had done at Palermo. I found two gardens worthy of notice, one on the port, sheltered and protected by the town, with a rivulet running through, which gives an abundant supply of water, the other at the convent of Benedictines. The Benedictine monks have a very handsome church and monastery on the north-western limit of the city, immediately facing Etna. The great lava current of 1669 submerged the old garden and stopped within ten feet of the church; a miracle the monks thought due to their prayers. The present garden is built on the lava which covers the former one, on a level with the first storey of the convent. There is no protection whatever between it and the mountain, and at night a cold down-draught must set in from the snow regions. As a result, this garden, notwithstanding its sunny exposure and low latitude, might almost be in a sheltered spot in England. The flowers were only the earliest spring flowers, such as anemones, and the geraniums were all in pots. Indeed it was by no means as advanced as a garden at Nice would be at the same epoch of the year.

The difference between this garden and the one on the port, protected from the Etna down-draught by the town, and exposed to the south-eastern sun, was very striking; the latter was one mass of flowers, all planted out—Geranium, Verbena, Heliotrope, Petunia, Antirrhinum, Nasturtium, red Linum (called Inglese by the gardener). Everything was growing with the wildest luxuriance and beauty. The garden was a regular carpet of flowers, and vegetation was as far advanced as it would be in a well-cultivated garden in England in July.

The examination of these two gardens was conclusive. From its southern latitude, and from its full exposure to the south-east, Catania would have necessarily a very mild winter climate, were it not for the immediate vicinity

of the extensive snow-clad plains of the upper regions of Mount Etna. From their gentle slopes there must be a nightly down-draught, or land-breeze, unintercepted by any ridge, which must make the nights cold from December until May. When I was there at the end of April, in magnificent sunny weather, the nights were colder than I had felt them for a month before anywhere else in the Mediterranean; I had to get up in the night to partially close the window, and to put a cloak on the bed. A careful pilgrimage through the cultivated region of Mount Etna to Nicolosi confirmed this view.

Nicolosi is a well-known village, twelve miles from Catania, in the direction taken for the ascent. There is a good road, and it is usual for those who wish to ascend to drive in a carriage thus far, and then to take mules. On this occasion I confined myself to the drive.

I found evidence everywhere of cold winter nights, as on the Riviera, as at Naples and Palermo, and also of cold down-draughts up to that time from the snow-clad plains of Etna. The deciduous trees, Mulberry, Fig, or Almond, which were the most numerous, were not in leaf, the Vine was only sprouting; the flowers and ground vegetation reproduced at every step the contrast between the two gardens at Catania. Wherever there was any little valley, any depression, with a ridge to the northwards, vegetation was luxuriant; it was that of June and July with us. Moreover, in these spots were generally growing Orange and Lemon trees. Where there was no protection, and on exposed ridges, the ground vegetation was backward, and there were neither Lemon nor Orange trees to be seen.

This drive is a most singular and interesting one. The most exuberant fertility exists; but in the midst of cinders, scoriæ, and lava-dust. It is perfectly evident that the decomposed lava contains the elements required for vegetation, and that once it is reduced to the state of soil by time, all that is wanted is sunshine and water. The first is ever present in this favoured climate, the second can only be obtained with great difficulty. In many parts of Mount Etna the shepherds and inhabitants depend entirely

for water during the summer on collections of snow preserved in the higher regions. Indeed Catania and part of Sicily is supplied with snow in summer from Mount Etna. This fact speaks for itself as to the possibility of finding a cool summer temperature on its flanks.

The cultivated region of Mount Etna is so fertile that from time immemorial it has been dotted with towns and villages which now number sixty-five and contain three hundred thousand inhabitants, all living comfortably on the bounty of the soil. It produces abundantly oil, wine, lemons, oranges, almonds, cereals, silk, and fruits of every description.

Nicolosi, 2264 feet above the sea, is composed of low, one-storied, solidly-built cabins or houses. They are thus built as a precaution against earthquakes, to which this village is even more exposed than Catania. The view both of the mountain and of the plains below, of Catania, and of the sea, is very beautiful. In the immediate vicinity are two volcanic cones, the Monti-Rossi, which are of recent formation, for they were thrown up in the eruption of 1669. One of the peculiarities of Mount Etna is that its eruptions have, from time immemorial, as often, or oftener, taken place from new cones formed on the flanks as from the principal one at the apex. There are hundreds of those secondary cones of all sizes on the sides of Etna, extending from the upper or deserted region to the cultivated one. Many of the cones are of great size. Thus one of the twin Monti-Rossi, so named from their red colour, is two miles in circumference at its base, and is by no means one of the largest. These cones are side by side, and protrude from the mountain like two half-spheres. They are quite naked, but many of the secondary ones are clothed with timber, which sometimes extends down to the bottom of the old crater; the effect is then very picturesque.

Tourists who intend to ascend to the summit of the volcano, here take guides and mules, and begin the more fatiguing part of the ascent, through the woody region of the Bosco. The species of trees vary in different regions of the mountain, but on the south-east, or Catanian side, they are as we ascend Chesnut, Oak, Cork, Fir, Beech,

Birch, and Hawthorn. There are many wood-covered cones in this region, and they are said to be very lovely, as are the woods in general.

I was told both at Catania and at Nicolosi that the forest glades, especially in the higher wooded regions, are cool and pleasant in the most scorching heats of the Mediterranean summer. It struck me that nature has provided an admirable sanitarium, the very place I was searching for, as yet quite ignored, in the sylvan retreats of Mount Etna.

In Switzerland the physicians of the large towns, such as Geneva, Lausanne, and Lucerne, are well aware that the great heat of even the Swiss plains is very injurious to the sick, to the weak, and to all convalescents, and that cool mountain air is life in such cases. They have, therefore, by their advice, led to the establishment all over Switzerland of mountain hotels or pensions, at elevations of from two to three or five thousand feet. To these hotels they send many convalescent and debilitated persons during the summer months, and to them also resort multitudes of the sound and strong, to escape from the extreme heat of July and August.

Why should not our heat-oppressed and fever-stricken countrymen in the South Mediterranean, at Malta, Naples, and elsewhere, establish some such sanitarium or mountain pension on the cool slopes of Mount Etna? Would it not even be worth while for our Government, if feasible, to found such an establishment for the troops at Malta? Invalids have now either to bear the tropical heat of Malta, or to be sent home, a long and expensive journey.

Were such a sanitarium established there would be no real difficulty in obtaining supplies, in the immediate proximity of a large city of eighty-four thousand inhabitants, with a good carriage road as far as Nicolosi. This village being twelve miles from Catania, there would only remain six or eight to ascend on mules, to reach the probable site. Such a sanitarium would, I feel convinced, be a great boon to southern Europe, and I hope yet to see it established.

The deserted region, very aptly so called, comprises the last four thousand five hundred feet of the volcano. In

winter it is entirely covered with snow, which descends low down into the Bosco; in summer, it is only partially so covered. It contains no life, vegetable or animal—scarcely a lichen or an insect, and is a desert of ashes, scoriæ, and cinders. The final cone, now eleven hundred feet high, rises out of a wide and long plain at the summit of the mountain; its height varies from one eruption to another. Sometimes part of it falls into the wide crater, and thus the height of the mountain is lessened; sometimes a new eruption of ashes and lava rebuilds it higher than ever. Mount Etna is truly a magnificent and intensely interesting sight; it is certainly the most wonderful object in nature it has ever been my good fortune to see, and is alone worth the trouble of several journeys to Sicily.

The above pages were written on the occasion of my first visit to Sicily in 1863, when I was not well enough to ascend beyond Nicolosi. I have recently (May, 1874) paid Sicily and Catania another visit, and being in better health, more equal to exertion, I have carefully explored the lower regions of Mount Etna, with a view to the discovery of a locality suited for the summer sanitarium. After driving to Nicolosi, I took mules and ascended as high as the house called the "*Casa del Bosco*," at an elevation of 6233 feet. It is the house where those who wish to ascend to the summit of Mount Etna usually pass the night. We reached this point of the ascent without any fatigue, a distance of eight miles from Nicolosi, in two hours and a half, by a very tolerable but rocky track, one that any lady or child could easily take. We were told that the snow had only disappeared in this district for about a week; later, however, than usual. The ascent was very gentle, over slightly-rising plains and sloping hills. From the "Casa" the ascent becomes more precipitous, but I went no further, satisfied that I had found a spot where a mountain hotel, or summer asylum against heat might be advantageously established.

The forest of old Chestnut trees described by former writers has been cut down for timber. Lying near the path were several huge trunks, many feet in circumference, and the remains of trees hundreds of years old, which had not yet been removed. Their place was, however, supplied

by young trees, Chestnuts and Oaks, from ten to fifteen years old. The air was fresh and pleasant, the view over Catania and the adjoining Simeto plain truly splendid. The vegetation was principally composed of grasses, small Thistles, Daisies, Silene, Saponaria calabrica, Taraxacum, Mustard, Nettles, white Clover, Blackberries, Ivy. There were wild Plum and Pear trees in flower, oak brushwood, and patches of cereals, bearded Wheat and Barley, and Lupins. As we were two hours and a half reaching this spot from Nicolosi, and two hours driving from Catania to Nicolosi, the entire ascent from Catania took four hours and a half in all, twenty miles.

Catania, on the other hand, is only seven hours distant from Malta, so that it would be possible to dine at Malta, sleep on board the steamer, and be more than 6000 feet high on Mount Etna by breakfast time the next morning, in a region cool and pleasant during the greatest heat of the scorching Mediterranean summer. Once there the days might be spent delightfully in ascents to higher regions, and in exploration of the picturesque flanks of "Mongibello," in a wilderness of cones and craters, of rocks, valleys, glades, and woods. Nothing would be easier also than to get daily supplies of every kind from Catania.

The "Casa del Bosco," and the surrounding region of Mount Etna, belong to a Spanish nobleman who would no doubt favour the plan, not only for the public good, but also because it would give value to a property now all but valueless. We had a beautiful day, there were no clouds on the mountain, only a long streamer of white smoke from the cone, the entire elevation of which we saw distinctly.

Nicolosi and the "Casa del Bosco" lie on the south-east side of Etna. In order to see if a better locality could be found in another direction, I attempted to carry out a long and ardently desired project, a visit to the Col del Bove.

The Col del Bove is an immense valley or hollow, scooped out of the north-eastern flank of the mountain by some mysterious agency, large enough to swallow up Mount Vesuvius and its cone. The entrance to it is twenty miles from Catania, so I took a carriage and pair and started at six A.M.

We passed through many smiling villages, apparently the abode of peace and plenty, through a land literally flowing with oil and wine, rich in figs, fruits, and corn. The highest villages reached were not more than 2000 feet above the sea, and they were mostly between 1000 and 1500 feet. In all there were modest villas, belonging to the Catanians I was told, who there spend the hot days of summer.

Arrived at the end of our drive, at the village of Zaffarana, we hired mules, and started for the ascent, one of the most glorious and fascinating I ever made. For a few hundred feet more, up to 2500 feet, there were still patches of cultivation, vines, cereals, figs, and then we reached a billowy sea of lava. We crossed and recrossed rivers and streams, and torrents of lava, over rocks, boulders, cinders of lava, under and over cascades of lava. We saw where it had rushed over ridges and mountain sides, where it had poured over precipices, filled valleys, and crossed older lava torrents. Indeed, we witnessed every conceivable and inconceivable vagary and freak that rivers of molten metal, issuing at one period from one direction at another period from a different one, can possibly accomplish on a rugged mountain side. I was entranced, and forgot all the discomfort of being on a mule without a saddle, sitting on a sack of straw, with merely loops of rope for stirrups. But man never is to be truly blest. Just as we reached the entrance of the grand amphitheatre, which forms the Val del Bove, a mass of clouds, which had for some time been hovering over us, rapidly descended, concealed everything from our view, and bid us retrace our steps lest we should be lost in their cold embrace. This I did very sadly, for there was but little chance of my ever again being able to visit this scene of geological enchantment.

We were at an elevation of four thousand feet. All cultivation had long ceased, and Lichens, Mosses, Ferns, Brooms, and Crassulaceæ were abundant in the crevices of the older lavas. The Ferns were Ceterach, Polypodium vulgare, Asplenium trichomanes, Pteris aquilina. The moisture and coolness of this region were evidently favourable to the disintegration of the lava, for that of 1852 was already

covered with Lichens, and lower down, that of 1773 was cultivated; whereas near Catania the lava of the latter date is still absolutely naked, as devoid of vegetation as the day it was poured out of the volcano.

I heard from my guide many interesting details respecting the eruption of 1852, the greatest since 1669. The river of lava only stopped a few hundred yards above the village of Zaffarana, the one at which we commenced our ascent. The villagers had long given up all hope, and had removed their goods and chattels. As at Catania, the lava stopped just behind a church, which was and is considered a miracle. Although the eruption lasted months, and poured out a sea of lava, occasioning great devastation, there were no human lives lost; there was only one serious accident, and one animal burnt. A young Englishman jumped, for a freak, on to a rock, which was shown me, then encircled with molten lava. He missed his footing, and fell with one leg into the burning stream. The leg was consumed to the knee, and he had to suffer amputation, but survived. The mule, less fortunate, jumped on the molten lava in an agony of fright and a fit of disobedience, and was burnt to death. The one was not more reasonable than the other, said my guide, who told me this tale; both deserved their fate!

The result of the excursion was to confirm the conclusion previously arrived at—that the vicinity of the "Casa del Bosco" is the locality best adapted for an Etna sanitarium. In the smiling villages through which I passed there are already, however, as stated, many villas, no doubt easily obtainable, which would be a great improvement on Malta and the mainland as a summer residence, but they are not high enough on the mountain to escape entirely the summer heats.

In conclusion, I saw no reason to think that the winter climate of Catania was superior or even equal to that of the Riviera, and to that of Mentone in particular. As we have seen, it is exposed to cold winds from the north and north-west, the direction in which Etna lies; that mountain being covered with extensive plains of snow all winter, down-draughts from these snow plains must reach it.

Moreover it is quite unprotected from the cold north-east winds which descend from the Calabrian and Dalmatian mountains, snow-covered during the winter.

The mean winter temperature of Catania, like that of Palermo and of Naples, is higher by some degrees than that of Mentone and of the Riviera; but I believe that in both localities the fact is in a great measure owing to the occasional prevalence of southerly winds, and especially of the scirocco, or south-east wind. The latter comes from the African deserts, the hottest summer climate in the world, like a blast from a furnace, gathers a great amount of moisture from the sea as soon as it touches it, and reaches Sicily as a hot, damp wind, most enervating and relaxing. It is dreaded throughout the island, as at Malta, even more by the natives than by strangers, and is decidedly a weak point in Sicilian climate. It generally lasts three or four days, with the thermometer from 90° to 95°, although it feels much higher, producing excessive dejection and lassitude. While it continues it is a source of the greatest discomfort to the entire community, to the sound as well as to the unsound. As I have already stated, the trying nature of the scirocco, or south-east wind, as we reach the more southern regions of the west Mediterranean, counterbalances to a great extent the advantage gained by intenser sun heat. The scirocco appears to be more oppressive at Palermo, although on the north coast, than at Catania, or in any other part of the south of Sicily generally. This is supposed to be owing to the reverberation of the sun's rays from the rocks in the mountain amphitheatre behind Palermo increasing its heat. During its persistence the streets are deserted and silent, the natives shutting themselves up in the houses with closed windows and doors. This wind was as much detested by the ancients as by the moderns. Admiral Smyth says it was, without doubt, "the evil vapour of Homer (Iliad v.), into which Mars retreated when wounded by Minerva."

Nevertheless I think a residence at Catania in winter would probably suit those who, without being seriously ill, require a sunny, temperate climate, rather drier and more

bracing than that of Palermo, not so dry or so stimulating as the north shores of the Mediterranean. To some the proximity of the king of European volcanoes, the strangeness of this volcanic region, the facility with which from it other parts of the Mediterranean can be visited in spring or autumn, may appear a positive advantage, and incline them to choose Catania as their winter abode. The town appears to be exceptionally clean and open for a southern city, and offers many resources.

When I first visited Catania there was no comfortable hotel, but this drawback has been removed by the erection of the large and commodious "Grande Albergo di Catania." It is under Swiss management, and is as good as the general run of large hotels on the mainland, but then the prices have become the same. This is the invariable result of improvement in hotels on the Continent, with English comforts, or even with the mere attempt to attain them, we have everywhere and anywhere to accept English or Parisian prices.

The town of Catania has much improved since I first saw it twelve years ago, and is still improving. New houses and streets have been built, and a really lovely public garden has been planted and opened by the municipality in a very good position, just above the town, underneath the Dominican church. It is called "Giardino Bellini," in honour of the renowned composer. The house in which was born the author of "Norma," "Puritani," "Sonnambula," abuts on the garden. Bellini is much revered by his countrymen, who highly appreciate the honour of having given birth to such a man, a very fountain and temple of melody. They deeply deplore his early death, as do all musical mankind. The Botanical Gardens also deserve a visit; what I saw in both these gardens only confirmed former impressions. There is now a railroad open from Messina to Catania and Syracuse, but, as on the Genoese Riviera, the gain is a loss.

The object of my excursion to Sicily was more especially to study the position and climate of Palermo and Catania. Having brought this investigation to a satisfactory issue, I felt free to depart. Catania is, however, too near to Syracuse, and Syracuse is too intimately connected with the history of the ancient Greeks and Romans, which all but

engrosses our youthful thoughts during twelve or fourteen years of early life, for a strong desire to visit it not to arise. There was a small Sicilian steamer, starting the next day, and as it proved calm and fine I went on board at 10 A.M.

This time I was again quite alone. My young German Baron had proved a very agreeable companion at Messina, notwithstanding his heraldic carpet-bag. Once we had left his countrymen at Palermo, and he found himself alone with me, all stiffness and hauteur disappeared. He seemed to lean upon and to confide in me, and we spent several days together very harmoniously, then separating, he for Naples, where he intended rejoining his family, I for Catania.

The morning was, as usual, very beautiful, and the motion of the vessel was so easy and steady that there was no excuse for being even uncomfortable. The blue sea danced merrily at the bows of the little steamer, and as we receded from the land, whilst crossing the Gulf of Catania, the mountain of mountains (Mongibello) rose higher and higher on the north-western horizon. Indeed, the further we receded the grander and more imposing did Mount Etna become, distance merely bringing out in greater relief the colossal proportions of the king of volcanoes. Catania soon became a mere mass of white houses on the sea-shore, whilst above was spread out, as in a panorama, the different regions of Etna—the green cultivated district, dotted with numerous white villages and towns—above, a wide belt of forest trees, the Bosco, of a more sombre hue—and then a naked region which extended higher and higher to the abode of eternal snow. From the sea, at the distance of some thirty miles from Catania, not only were all these details distinctly visible, but the large plain at the summit, and the terminal cone in the centre, also came into view. This cone, although rising nearly eleven hundred feet from the terminal plain, appeared to be merely a small mound.

There were no foreigners on board except myself; all were Sicilians, so I had to make myself as agreeable as I could, in rather second-rate Italian, to the captain and his lieutenant. The steamer was a small coasting vessel which once a fortnight performs the journey from Palermo to the Lipari Islands, Messina, Catania, and Syracuse, and

back. I had been cordially received on arriving on board as *un Inglese* (an Englishman), and by this name, or by that of *il Inglese* (the Englishman), I remained known both during this and the return voyage, as also at Syracuse. I now felt that I had quite got out of the beaten track, and that my own identity had completely merged into that of my nationality. The officers of the ship, although civil and obliging, readily answering any questions, were evidently not classical scholars, or even historians They told me they could not well understand what we "Inglesi" went to Syracuse for. It was not a pretty town, and there were only a few old ruins, "delle antichità," of no great interest, to see. The magic of the past was a closed book to them; they could not shut their eyes and see before them, as a thing of to-day, the great city of former times, with its eight hundred thousand inhabitants, its palaces and temples, its wealth, its numerous legions, and its hundreds of triremes or vessels of war.

On the other hand, they were quite alive to all questions pertaining to present times, were enthusiastic in behalf of *Italia Unità*, and told me that all the young men in the island were in favour of the annexation to Italy, of the expulsion of the Bourbons, of free trade with other nations, and of progress in general. We shall never again, they said, put our neck under the yoke of the retrograde party.

While coasting the low shore of this part of Sicily a number of quails came hovering round the vessel. Just arrived from the continent of Africa, and tired with their long journey, the poor birds of passage wanted to rest on our ship, the first "land" they had reached. The officers armed themselves with guns, and shot at the weary birds as they approached, an act of cruelty I could hardly forgive. The birds were evidently so tired that, although driven away by this harsh reception, they soon returned to the vessel for rest. Fortunately my friends were not good shots, and did but little execution. Quails arrive in great numbers in every part of Sicily at this time of the year, but more especially on the south coast.

About four o'clock in the afternoon we rounded the cape of Panagia, came in sight of the far-famed promontory of

Ortygia, on which the town of Syracuse is situated, and were soon safely moored in the spacious port. This port is one of the very best in the Mediterranean, according to modern authorities, although it was formerly believed to be too shallow to admit large vessels. It was Nelson who first showed the fallacy of this view by sailing in with a large fleet.

Syracuse is, perhaps, the most interesting spot in Sicily, on account of its grandeur and prosperity in ancient times, of its intimate connexion with the national history of Greece, Carthage, and Rome, and of the numerous remains of antiquity that it still presents. It was founded one year after Naxos (734 B.C.) by a colony of Corinthians, and rapidly attained a degree of wealth and prosperity unrivalled by any other of the colonies of Greece. In the year 485 B.C., under Gelon, it was able to offer thirty thousand men and three hundred vessels of war to Greece when attacked by Persia, and a few years later defeated the Carthaginians at Himera, and crushed their power in Sicily. In the year 415 B.C. began the deadly struggle with the Athenians, which ended by the defeat and capture of the Athenian general Nicias and of his army, after one of the most celebrated sieges in ancient history—a siege vividly described by Thucydides. It is said by this historian that the power of Athens never recovered from the defeat. The names of the Syracusan kings or tyrants, Hieron, Thrasybulus, Dionysius, Timoleon, Agathocles, are mixed up inextricably with Grecian history. Under them the population of Syracuse reached eight hundred thousand, and their dominion extended over the greater part of the island. The town itself was fourteen miles in circumference.

In the year 214 B.C. Syracuse was besieged by Marcellus, the Roman general, and fell before his legions, notwithstanding the bravery of the inhabitants and the skill of Archimedes, the greatest mathematician and engineer of Grecian times, after an independent existence of 522 years. Syracuse then became merely a Roman provincial town, and one hundred and fifty years later Cicero resided there as prætor. He has left, in his oration against Verres, a graphic description of its beauty, of its monuments and

of its wealth. Subsequently it followed the fortunes of the rest of Sicily, gradually losing the importance it had acquired in ancient times.

Even now, however, after the lapse of more than two thousand five hundred years, Syracuse is a rather handsome provincial town of more than sixteen thousand inhabitants. The modern town is still situated on the peninsula or island called Ortygia, connected artificially with the mainland in ancient times. It was on this peninsula, about two miles in circumference, which partially forms the greater port, that the town of Syracuse was first founded. As it rose in importance and prosperity it overflowed on to the mainland, until five new towns, there situated, were comprised within its walls. By degrees these suburbs or towns of former days have decayed and crumbled into dust, until now a few ruins are the only evidence of their presence. The most important and interesting are the Latomiæ or quarries, the catacombs, the remains of the Greek theatre, of the Roman amphitheatre, of the walls that surrounded the city, and fragments of various temples and buildings. All these ruins are deserving of careful study and investigation, as is the town itself. The latter contains much to interest the classical traveller, and more especially a temple of Minerva, now doing duty as the cathedral, and the fountain of Arethusa, still as clear and as abundant as when in olden times the Greeks thought they saw in it the nymph Arethusa hastening to the sea, and mingling her waters with those of her lover Alpheus, the river god, from whom she had tried in vain to fly.

The fountain of Arethusa is an abundant spring of fresh water, which bursts out of a cave on the seashore of the island of Ortygia, and which was and is still separated from the sea by one of the bastions of the city wall, so as to form a semicircular pool or basin. It was supposed to be part of a neighbouring river, the Alpheus, which had passed under the sea that separates the island from the mainland by a subterranean passage. Thus Virgil describes it in the "Æneid:"

"Alpheum fama est huc, Elidis amnem,
Occultas egisse vias subter, mare; qui nunc
Ore, Arethusa, tuo Siculis confunditur undis."

Carried away by classical recollections, I forgot at first meteorological and botanical studies, but soon my thoughts returned to a more practical channel. At Syracuse, and in the plains that surround it, I found that the cooling influence of snow-clad Etna was evidently less. The Lemon and Orange trees were creeping out of valleys and shelter, and were larger. Still even here, in the extreme south of Sicily, the value of protection is fully illustrated. The two largest Orange and Lemon trees that I saw in Sicily were growing in one of the Latomiæ; the Lemon tree was as large as a good-sized oak. These Latomiæ are enormous excavations or quarries in the solid rock, made in the days of Syracusan prosperity, to furnish stone for its temples, its walls, its buildings. In one of these were long confined Nicias and the seven thousand Athenians taken with him on the banks of the river Asinarus, when they fled, defeated, from the walls of Syracuse. Another, a vast excavation in the shape of the letter S, is still called Dionysius' ear, from its being supposed that it was excavated in this shape in order that the tyrant Dionysius might hear the conversation of his prisoners, from a private chamber acoustically contrived.

These quarries or excavations, from fifty to one hundred feet deep, have been for centuries converted into gardens, and are the scene of the most luxuriant fertility; some of the Lemon and Orange trees are regular forest trees. At the bottom of this novel kind of Sicilian conservatory they have sunshine and warmth, and quite escape all cold winds.

The view from Syracuse and from the heights to the north-east called Acradina, where the principal part of old Syracuse was built, extends over a marshy, ill-cultivated, unhealthy plain, through which meanders the river Anapus. This plain, of alluvial soil, contributed to maintain the eight hundred thousand people the city formerly contained. The soil and sun are there, still the same, but the labour of former days, the energetic action of man, is wanting.

The more I see of the south of Europe the more I become convinced that its vaunted fertility is a mere myth, unless labour and capital can be brought to bear. Southern rivers left to themselves carry devastation with them, denude the mountain regions, overflow the plains, and render them pestilential marshes, as we have seen when speaking of Corsica. It requires immense labour, and great capital, to keep them within bounds, to make them fertilize the regions which they would otherwise destroy or render uninhabitable. Withdraw the labour, leave them to themselves, and you very soon get marshes like the Pontine, the Tuscan, the Corsican, now all but uninhabitable from malaria, but which formerly nourished hundreds of thousands of inhabitants. On the other hand the mountain sides, the dry plains in the south, left alone, unwatered, are parched, burnt up by the sun. They too require labour and capital for their inherent fertility to be developed.

Syracuse was the most southern region of Sicily that I reached. I was very desirous, as previously stated, to have examined the central and south-western regions of the island, and could easily have done so by returning to Palermo through these parts of the island. The reports of danger to travellers, however, that reached me at Palermo were confirmed at Syracuse, so I thought it best to retrace my steps, and return by Catania, and Messina.

Limited as it thus proved, my exploration of Sicily was, however, sufficiently extensive to demonstrate the fact already asserted—viz., that four or five degrees of latitude barely compensate for the complete protection from north winds which is found in the more favoured parts of the Riviera, between Nice and Genoa. The proof of this climate fact is found in the circumstance, that not only are the vegetable productions of Sicily and of the Riviera all but identical, but that the progress of spring is the same in the two regions. We may allow an advantage to Sicily, even on the north and east coast, where there is complete shelter and protection from the north, or from cold mountain blasts. No doubt on the south-western coast, opposite Africa, this advantage is still greater, but I do not think it

would be possible for invalids to pass the winter in any of the small towns of the south-western coast with any degree of comfort. It may at least be surmised that such is the case, from the fact alone that travellers have to take provisions with them, as for a sea voyage.

On returning to Messina I learnt, to my very great satisfaction, that the French steamer was expected from Alexandria the next day, and would sail for Marseilles direct. That day was spent rather anxiously waiting for it; the sense of isolation had increased upon me, and now that my thoughts were turned homewards, I was anxious to depart even from sunny, smiling Sicily. I shall not readily forget the pleasure with which I saw the *Euryanthe* enter the port towards evening, as I was sitting alone at the window of my room. She is a noble screw steamer of more than two thousand tons, and glided silently and majestically into the port, like a large black swan, like a thing of life.

We started that evening, passed the ever-smoking, ever-flaming Stromboli volcano a few hours later, and then were soon out of sight of land in the old Tyrrhenian Sea. The steamer was a splendid ship, with accommodation for a hundred and thirty cabin passengers. As there were not thirty on board, I had a large cabin to myself, where I slept nearly as well as I should have done in my own house. We were three nights and two days on board, from Monday evening to Thursday morning, when we reached Marseilles, and, as the weather continued fine, I quite enjoyed the voyage, although a bad sailor in bad weather.

My compagnon this time was a middle-aged merchant captain, who had been beating about the world for more than thirty years. He told me many strange tales, but none more interesting than his own. Three years previous he was in command of a merchant ship bound for Buenos Ayres. When nearing the American coast he was overtaken by a terrible storm, and after battling with the elements for three days and nights, the ship became water-logged, utterly unmanageable, and was cast ashore. The breakers and surf were terrific, and, alone of all the crew, he reached the land, he scarcely knew how. On recovering from the first stupor

he found that the coast was a low sandy one, with no evidence of habitation. He was overcome with fatigue and drowsiness, never having slept for three nights and days, and finding two empty casks on the beach, knocked the heads out, put them close together, and crept in for shelter, as there was a cold wind blowing. In this impromptu retreat he slept twelve or fifteen hours, but, on awaking, found that he could not move. The two casks had slightly parted, and between the two a small chink or space remained, through which the wind had struck his loins, producing a band of acute rheumatic pain. He was rescued by some of the inhabitants of the country, attracted to the spot by the wreck, but never recovered the effects of the night's exposure, and had never since then been able to follow his usual seafaring life. He had consequently accepted the office of surveyor to Lloyds.

The duty of the surveyors to this insurance company is to transport themselves, when ordered, to any point where a wreck occurs, to examine into the circumstances of the case, in the interest of the company, and to make certain that the claim made for insurance is perfectly true and real. He had just been sent in this manner to the vicinity of Brindisi, in the Adriatic. A vessel laden with corn had gone aground in a gale, and the captain had reported that it was a perfect wreck, and that ship and cargo were lost. On arriving he found the ship stranded, but not broken up, and by a judicious expenditure of five hundred pounds, he got it off, thus saving both ship and cargo, and his employers many thousand pounds. He told me that he lived with his wife and family at Bath, and that he was thus liable at an hour's notice to be sent to any part of the globe on similar missions. He was paid by a regular salary, with the addition of travelling expenses. It is a singular position, to be quietly at home with one's family in the morning, in an inland town, liable to be sent at an hour's notice to any part of the habitable world, say to China, to Australia, to South America.

On the morning of the second day we passed through the straits between Corsica and Bonifacio. These straits are most picturesque, and the steamer glides between rocks

and islets, very similar to those that skirt the coast on the way from the Crinan canal to Oban. Caprera is passed at the eastern entrance of the straits, and we looked with interest at Garibaldi's little house, which we saw distinctly. These straits are free from danger in fine weather, but are very perilous in stormy times, especially to sailing vessels, which are constantly lost in winter. I was told of a singular and disastrous wreck that occurred at the time of the Crimean war. A French transport, with two regiments on board, on their way from Toulon to the Crimea, was wrecked near Bonifacio, but the men saved. They managed to land on the Corsican coast, and were taken back to Toulon. From thence they made a fresh start for the Crimea, in a steam frigate, the *Sémillante*. Again at the Straits of Bonifacio they encountered a severe storm, and this time the vessel ran on a rock, foundered, and out of 2500 men, not a soul was saved. There was a fatality over these poor soldiers; they were not to escape a watery tomb. Hundreds of bodies were thrown up on the adjoining shores, and were buried in the cemetery of one of the islands. The body of the captain was found dressed in full uniform, with all his decorations on; he had dressed to die!

Our progress continued easy and prosperous in the splendid ship. Several times the sea rose, but we scarcely felt it, so great was the size of the vessel, and so free was it from motion. On the Thursday morning we reached Marseilles, fifty-six hours after leaving Messina, and then all isolation finished, for even thus early I found myself in the midst of valued friends.

CHAPTER XIII.

SARDINIA.

THE VOYAGE—LA MADDELENA—THE STRAITS OF BONIFACIO—PHYSICAL GEOGRAPHY—PORTO TORRES—SASSARI—OSILIO—ORISTANO—IGLESIAS—THE ZINC AND LEAD MINES—CAGLIARI.

On the 19th of April, 1874, I left Leghorn for Porto Torres, in the Straits of Bonifacio, and the principal northern port of Sardinia, touching at Bastia. It was no longer my old friend the *Virgilio* which performed this voyage, but a long narrow fast steamer, quite new. Fortunately for the passengers the weather was calm, as otherwise we should have suffered fearfully, all these long narrow swift steamers being "terrible" rollers. On this occasion again I escaped a terrible storm by consulting the barometer. I intended starting by a previous steamer on the 15th, but the barometer collapsed half an inch, so I went to Florence, stayed there a few days, and on the 19th had the benefit of the lull that usually follows a storm. Thus once more I had a calm and pleasant passage to Bastia, remaining on deck all day, watching at first the receding mountains of the mainland, and later those of Corsica, as they loomed larger and larger on the horizon.

On this occasion we passed close under the island of Capraja, which lies midway between Leghorn and Corsica. It is a rocky mountainous islet, which rises boldly out of the sea to a considerable elevation, and is only a few miles in circumference. Its precipitous slopes are covered with vegetation; and on the southern shore there is a village, with its small church, principally inhabited by fishermen. There is, I was told, but little communication with the mainland, and life on such an islet must be merely an improved edition of living in Eddystone lighthouse. And yet, were we at Capraja, we should find the drama of life, with its vicissitudes and passions, going on as in the largest cities. Human life is everywhere the same, and mankind

SARDINIA

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10 20 30 milles

Paris. Imp. Monrocq.

everywhere reproduces its characteristics, only on a different stage, and in a more or less dramatic form.

In the afternoon we came-to outside the port of Bastia, and I had the pleasure of welcoming a boatload of previously apprized Corsican friends. Their warm greeting made me regret that I could not remain on the hospitable shores of their lovely island. As soon, however, as we had delivered and received our letters and passengers, we again started, this time for Sardinia. The steamers run along the eastern shore of Corsica all the way to the Straits, so that I spent the evening, until nightfall, gazing on the well-remembered mountains and coast line.

The moon rose early, shedding its radiance over the tremulous sea, and reminding me of Virgil's charming hemistich :

". . . splendet tremulo sub lumine pontus."

The night was peaceful, and when we reached the deck the next morning at six o'clock, the steamer was lying in front off the town and island of La Maddelena. The rocky island of Maddelena is one of an intricate Archipelago of small islands which occupy the eastern extremity of the Straits of Bonifacio, half way between Corsica and Sardinia. It has a good port, and is so sheltered by the other islands that we appeared to be in a lake, surrounded by rocks and mountains. This position gives a most picturesque appearance to the little town, which is built on a gentle slope rising from the sea. The patch of small, one or two-storied houses, and the humble church, nestling on the sea-shore, with a background of grey rocky mountains in close proximity, had a charming effect, enhanced by the sunshine and the freshness of an early morn in a southern region. We unloaded lots of stores into the barks that put off from the shore, iron bedsteads, iron railings, furniture, groceries, some large mirrors, kegs of spirits, and many other evidences of modern civilization. Little Maddelena, owing to its central position, is a kind of thriving commercial emporium for these parts, especially for Sardinia. Caprera occupied the horizon, and Garibaldi's white house was quite visible.

Once more under weigh we soon emerged from our marine "lake" into the wider and more open part of the

SARDINIA

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10 20 30 milles

Straits, passing a little rocky islet on which was a large iron cross to commemorate the loss of the French transport, the *Sémillante*, in 1856. It was on this rock that it struck on a stormy winter's night. As I have elsewhere stated not a soul was saved out of 2500 on board! Our captain, an experienced talkative old Genoese sailor, who had been forty years at sea, said the vessel was lost owing to the inexperience of the captain. He was considered to be a good and experienced officer, but had never been in the Straits of Bonifacio before, and as there are no pilots he had to navigate his vessel by charts, and that in a stormy dark winter's night through islands, rocks, and shoals, calculated to try the most experienced seaman! My friend thought he could have carried the vessel safely through even on such a night, but then he had been in the Straits a thousand times, in all weathers, in all seasons, day and night. That very night he was at sea between Naples and Cagliari in a small steamer, and was all but lost although in open water; he only saved his vessel by dint of seamanship. The French captain ought never to have ventured the passage in such weather. There was shelter within reach on the Sardinian shore, but, being ignorant of the locality, and clearly unaware of the fact, he continued his course, and thus sacrificed his own life and those of 2500 men!

On passing out of the straits we had Corsica to the north, the open sea to the west, and the Gulf of Asinara to the south-west. Our course was directed to the south-western extremity of the latter, its most sheltered region, and at one o'clock we reached Porto Torres. Our entrance into the small harbour was for some time impeded by a large French transport, which was embarking Sardinian ponies. This pleasing occupation was continued with the utmost calmness, just as if we had not been waiting, and we had the pleasure of seeing many young ponies dangling in the air, in a state of great terror and agony of mind, and also of witnessing an attack of southern indignation with which our really amiable captain was seized. His eyes literally flashed fire, his hair all but stood on end, and he all but foamed at the mouth with indignation. Nor

was he silent; on the contrary, he gave vent to a torrent of objurgation and vituperation, which proved to us a first rate lesson in Italian. At last the obstacle to our entrance was overcome and we entered.

Thus ended our voyage from Leghorn to Sardinia through the much dreaded Straits of Bonifacio, which, owing to the fine weather, proved a mere pleasure cruise. I have now on three different occasions passed through them and always in calm weather, so that it requires on my part an effort of imagination to think of these Straits as storm and wave tossed, lashed into fury by the hurricane, and as the grave of many noble ships—of many thousands of hardy mariners.

PHYSICAL GEOGRAPHY OF SARDINIA.

Sardinia is an island 147 miles long, between latitude 38° and 41°, and 70 wide in its broadest part. It is in nine-tenths of its extent a mountainous region, but the mountains do not rise so high as those of Corsica. The mountains in the northern and western region are mostly granitic. When not of this formation they are principally palæozoic, often schistic, with basalt cropping out, or with calcareous formations lying on the schists. It is principally at this point of contact that minerals, lead and zinc, are discovered. Between Porto Torres and Sassari there is a lime formation, mixed with white sand, so that the vegetation of lime soils is rife; but in a considerable portion of the island the soil is exclusively granitic or schistic, and in these regions the vegetation assumes the characteristics of such soils.

The mountains of Sardinia occupy the eastern and western regions of the island; the centre is constituted by a series of plains, running from north to south, elevated in the northern half, low and marshy in the lower or southern half. They are called *campidani*. Through the kind of shaft thus formed by the mountains, running north and south on each side, and the plains in the middle, the north-west and the north-east winds rush down without obstacle of any kind, and arrive at Cagliari, in the south, still as cold winds in the winter months. Thus are impressed

upon these plains, and even upon Cagliari itself, the characteristics of a winter climate much colder than that of the western Genoese Riviera, as evidenced by vegetation. Such is the result of the want of protection from north winds even in the south of the Mediterranean, three degrees further south than the Riviera.

The mountains on the east and west appeared to me, as far as I saw them, to have been thrown up in great confusion, forming elevated valleys and mountain summits running in all directions. I did not see the regular high ridges or spurs descending regularly to the sea, from east to west, as in western Corsica, and enclosing protected valleys. Some of the eastern mountains attain a considerable elevation. Thus M. Gennargentu is 6293 feet above the sea.

Thus the vegetation of the mountains and valleys on the south-eastern side of the island, about Iglesias, where I examined them, presents a southern vegetation, it is true, but not a vegetation indicating exceptional winter warmth, as on the western Genoese Riviera—rather the reverse.

PORTO TORRES—SASSARI.

Porto Torres is merely composed of a few small houses, wineshops, and warehouses. Owing to the proximity of soft water marshes and lakes formed by the partial closure of the mouth of a small river, Porto Torres is a prey to malaria, and so unhealthy during the summer and autumn that no one remains who can possibly get away. The Great Sardinian Railway, which will soon pass through the entire length of the island down to Cagliari, begins here, and has been open several years. Its existence has tended still more to depopulate Porto Torres, as both passengers and goods are now easily transferred to Sassari, eleven miles distant.

The presence of a railway, with comfortable first-class carriages, throws such a halo of civilization over any place that it is impossible to think one's self in a barbarous or even out-of-the-way country where it exists. The impression produced on me and on my travelling companion—for this time I had one, a nephew—was, therefore, favourable;

and we arrived at Sassari in a very jubilant, contented frame of mind.

Sassari, the capital of northern Sardinia, has a population of 32,000. It is situated at an elevation of 650 feet above the sea, which removes it from the pernicious influence of the marshes near the shore, and is built on the slope of a very steep hill. This hill, indeed, is so steep that it is a perfect toil to ascend from the lower to the upper part of the town, through the principal street. This we did on leaving the railway-station, and found tolerable accommodation at the Albergo d'Italia. Most of the inns in unfrequented Italian towns only occupy one or two storeys in one of the ordinary houses, and this was no exception to the rule. However, we did not starve either here or anywhere else in Sardinia. What with good wine, good bread, and fresh eggs *ad libitum*—everywhere to be found in southern Europe—and with such fish, meat, or game as the traveller chances to get, no one need suffer from famine in the most unfrequented regions. Fleas at night are, no doubt, a trouble—a grievous one, and if allowed to have their way, would sorely mar the pleasure and health-benefit of travelling with all whom they attack; but a few bottles of Persian powder, or Poudre Insecticide, afford the means of offering battle, and what is more, of conquering.

I had a letter of introduction to Signor Crispo, the leading physician at Sassari, and a retired Professor of the University. Under his guidance, and with his friendly assistance, I saw all that there was to be seen at Sassari in a couple of days—a new hospital, with large airy wards; a new prison, on the solitary Pentonville plan, which has cost 40,000*l.*, and appeared to me sadly unsuited to the uncultivated minds of the half wild Sards; the University, with its lecture-rooms, library, and museum; the Barracks; the Italian Opera House; and the public garden.

There are many good shops at Sassari, and it is evidently the centre of an extensive district and of a large area of population, the wants of which it supplies. Its own population of 32,000, however, is composed, in a great measure, of agricultural labourers, who number 22,000, a fact which

illustrates a very singular social condition in Sardinia. They cultivate the surrounding country for many miles distant, walking or riding little wiry Sard horses, according to their means. This state of things is a feature throughout Sardinia. The entire population lives still in the few towns or large villages, the labourers losing a great part of their time and strength, morning and evening, in going to and from their work. There are no farm homesteads, and scarcely any small villages, even in the more fertile and more populated parts of the country.

Many reasons are given for this state of things by the Sards themselves. Firstly, the insecurity of the country, until quite recently, owing to brigandage. Secondly, the fear of malaria, the towns and large villages being generally built in regions considered free from malaria, and being considered healthier as towns than the country, which is generally feared as malarious. The peasants fly to the towns at night, under the impression that it is unwholesome to sleep anywhere in the country. Thirdly, the strongly felt and expressed desire of the women to live together, with their relatives and friends, with whom they can gossip and talk all day. They are said to refuse positively to live isolated in the country, in a farmhouse for instance.

The consequences are most disastrous in a social point of view. Although wages are not very high nominally, about two francs—1*s.* 8*d.* a day—say 10*s.* a week, what with the journey to and from work, and a two hours' "siesta" in the middle of the day—the custom of the country—only five or six hours' lazy work is got out of a labourer. This, I was told, makes all agricultural operations ruinously expensive.

Then the children, brought up in towns, without milk, if the debilitated mother cannot give it, die like flies in autumn; I was told that not two out of ten are reared. Two years ago there was an epidemic of diphtheria in Cagliari, and 800 of these half-fed or badly-fed children died of the disease in a population of 30,000. In August, 1855, there was cholera in Sassari, which then had a population of 22,000, and one-third, or about 7000, died!

Such is the result of cooping up an agricultural population in towns and large villages, without milk-producing animals for the children to feed on. During the first year of a child's life its very existence depends on its obtaining milk from some source or other. Thus is partly explained, also, the depressed state of agriculture and the falling off of the population of Sardinia, everywhere observed and lamented.

On April 22, on a beautiful clear, sunny, but cool day, I made an excursion from Sassari, itself elevated 650 feet above the sea, to Osilio, a small town 1200 feet high, about ten miles distant. In the immediate vicinity of the town we passed through a wood of large Olive trees, which are generally found on the sides of limestone hills, on rising ground, and disappear when the soil becomes granitic or basaltic. Along with them were Almond and Peach trees in full leaf, fruit large, ten days or more in advance of Tuscany; Broad Beans ripening, Pear trees in full flower and leaf, corn three inches high, Corn Poppies, Garlic, Dandelion, small Euphorbias in flower, Flax in flower, Bugloss, Pellitory, a small Marigold, a small red Geranium which in places covered the ground, Groundsel, Plantain, Oxalis, Mustard in flower, Mallows, Ivy (vigorous, covering walls), the large variegated southern Thistle, Chrysanthemum segetum (very abundant), Blackberry (vigorous), and large hedges of Opuntia or the Prickly Pear.

As we progressed we got out of the lime soil into basalt, and the vegetation changed. The Ivy, Olives, and fruit trees disappeared, and were replaced by the Stone Pine, the Maritime Pine, Asphodel, Ferula, Pteris aquilina, Oaks without leaves; Elms, first leaves only showing; Oats in flower under cultivation. On the whole without mountain protection, exposed to north winds, the ground vegetation appeared to me about ten days in advance of Spezzia, owing to the greater power of the sun in a locality two degrees more south.

Every year, in whatever region of the Mediterranean I happen to be, I notice the remarkable fact that the surface vegetation is much in advance as compared with

the tree vegetation—that of the deeper soil. Thus flowers are often six weeks, or even two months, in advance of our own country, whilst trees are seldom more than three weeks, and that quite in the South Mediterranean regions. The explanation is no doubt that in early spring the power of the sun, much greater in the south than in the north, warms the surface of the soil so as to induce rapid surface vegetation, long before the deeper soil, where the roots of trees lie, can be warmed enough to start them into life and growth.

The tree vegetation showed no difference as compared with the mainland one or two degrees more north; and I did not see a trace of Orange or Lemon trees. The summer heat at Sassari is clearly more than enough for their welfare, as shown by the luxuriance of the Opuntia or prickly Pear hedges, but owing to the want of mountain protection from east to west, to cut off the north winds, the winter cold proves too much for them. There is a sheltered valley behind the town, in which the Olive trees are very large, and in which Orange trees grow to a respectable size, and ripen their fruit. In this latitude they will do so anywhere, if protected from the north wind. The Sassari people, however, did not appear to rely on their own oranges; all on sale were stated to come from Milis, near Oristano, one hundred miles south-west.

The public garden at Sassari is very badly kept, full of weeds. I went over it carefully, but found no evidence of exceptional winter mildness of temperature; rather the reverse. There were Elm and Robinia Pseud-Acacia just coming into leaf, Laurustinus still in flower, also Judas tree and Lilac; Jasminum revolutum not in flower, hybrid Roses only just beginning to form buds, a few white Bengal Roses in a sheltered spot, Pinks not in flower; Broom and garden Poppies the same. The only flowers were single Stocks, Iris, Medicago, Wall-flowers. In my garden at Mentone on April 10 (twelve days before), all mentioned in the above list as in flower, were going out of flower, and all mentioned as not in flower, were in flower, and yet Sassari is 200 miles more south. But then my garden is protected in winter from north winds by mountains running east and

west, and Sassari is not. In this public garden there were two miserable Palms, with a few terminal leaves only, to which my cicerone, a native gentleman, pointed with pride; they were merely struggling for existence. On the other hand the Aloes and Yuccas were very fine—indicating, as did the Opuntia hedges, intense summer heat.

From Sassari, in the north of Sardinia, to Cagliari in the south, a very good road has been recently made by the Government, at an expense of 157,000*l*. In two years the two capitals of Sardinia will be connected by a railroad, now in course of construction. At present the line is only finished and opened from Cagliari to Oristano in the south-west, and from Cagliari to Iglesias. Fifty miles more, due south from Sassari, are to be opened this summer. The communication is at present kept up by a small diligence, which leaves Sassari at 6 P.M., and reaches Oristano at 2 P.M. the next day—a very fatiguing journey. I adopted it, however, instead of taking a carriage and stopping on the way, much to my regret, as the road was said not to be quite safe. In proof of which we had two mounted carabineers in front of us all night, riding gravely in the moonlight. The sight of these troopers every time we looked out of the coupé window gave us a delightful sense of insecurity, bringing, as it did to our recollection, all the stories of brigands ever read. At Sassari I was told that there was really no danger, but that this precaution was taken merely because some months before a sum of gold sent by the diligence had been waylaid and seized. It appears, also, that the Sardinian brigands have not as yet attained the degree of refinement and mental cultivation which leads their Italian brethren to wage war on society as potentates, making prisoners and asking ransom! I was informed that, if by any evil chance, anywhere in Sardinia, we did fall upon brigands, we were not to resist, but to meekly submit and to give them what we had on us, with which they would be completely satisfied.

The warlike, fighting traditions of the past appear to have a greater hold over the popular mind and habits in the north of Sardinia than in the south. In the north nearly all the gentlemen and peasants we met out of Sassari

had a loaded gun slung over their shoulder, or in their hands, whether riding or walking; as if every man still moved about with his life in his hands, ready to defend it against his neighbour. This custom, combined with the very peculiar costume of the peasants, gives an exceptionally defiant warlike look to the country. In the more southern regions, at Oristano and Cagliari, nothing of the kind was to be seen, the entire population was unarmed. Perhaps the existence of the railroad and the freedom of intercourse it has established accounts for the difference.

As I have stated the costume of the peasants is peculiar, that of the men rather sombre but picturesque, that of the women less so. In the towns the men dress as on the continent, but in the country they preserve the national costume. It varies in different localities, but may be said generally to consist in a double-breasted leather or cloth waistcoat buttoned up to the throat, a kind of black kilt descending to the knee over loose linen or woollen drawers, and leather leggings; the hair is worn long and loose, or gathered up in a net. The women indulge more in colour. Over their head on gala days they wear a yellow cloth with red border, or collect their hair in a net like the men. Some wear scarlet stockings and ornamented bodices or embroidered jackets thrown over a low corset. The petticoat is made full with small plaits, and the sleeves are divided in the Greek fashion.

The coarse black cloth with which the men's clothes are principally made, is woven at home from sheep's wool. In the villages the houses are all of one story, even those of the better classes, and they are generally built of stone. I went over several houses at Osilio with my friend Professor Crispo, a native of the district, inhabited by his relatives and dependents, and noticed the evidence of a primitive style of life. Evidently most of the inhabitants of Osilio, such at least as were owners of land and cattle, were all but independent of the outer world. In one corner of their habitation was an old-fashioned hand loom with which they wove their cloth. In another corner was a heap of corn or maize, enclosed in immense baskets, or screens of matted cane, the year's "bread supply." What

with wine, oil, corn, figs and fruit to eat, woollen cloth of their own making, and mutton of their own feeding, they were really all but independent of the outer world; and this no doubt is the social state of the mountain peasants throughout Sardinia.

For the first seventy miles of the road from Sassari to Oristano we were on high schistic plains, surrounded by a stunted vegetation consistent with such a soil and elevation. Asphodel, Ferula, Pteris aquilina a foot high, Cork and Ilex trees, Lentiscus, Cytisus, Cistus the rock Rose, not in flower, prickly Broom, Hawthorn, as in England in full flower, Blackberry, Mediterranean Heath, Arbutus. All these plants constitute the beautiful *maquis* of Corsica, but they were growing here sparsely, never presenting the luxuriant growth of that island. Here and there were patches of corn, Oats, Flax, with a few fruit trees—Olive, Pear, Fig—near two or three large villages which we passed and where we changed horses.

The road then ascends to a height of 2145 feet, reaching the plain of *Campeddu* which separates the waterflow of the island. On the north side of this plain water flows north, to the Gulf of Asinara, whilst on the south side it flows south, to the river Tirse. On the south margin of this plain we find the village of Macomer, 2000 inhabitants, where the road begins to descend. In the vicinity of Macomer we saw, near the road, several of the sepulchral monuments called *nur-hags*, for which Sardinia is celebrated. They are supposed to be sepulchral monuments built by the Phœnicians, and although they are constantly being destroyed for building materials they are still very numerous; more than three thousand still exist. They are built of unwrought stones of colossal dimensions, arranged horizontally, present chambers internally, a small low opening externally, and are from thirty to sixty feet high, and from thirty-five to a hundred feet in diameter at the base. They are assimilated by antiquaries to the ancient towers of Orkney and Shetland, and to the round towers of Ireland, and are only met with in Sardinia and the Balearic Islands.

Gradually a plain is reached nearly on the level of the

sea, at first dry, then marshy, and after 15 miles we come to Oristano. Formerly a town of considerable importance, it is now decayed—owing principally to extreme unhealthiness, from its being surrounded by soft water or by brackish ponds and marshes.

The soil of this marshy alluvial plain is good, and a considerable portion of it is cultivated with corn, Beans, and Flax, or pastured. I was told that the ground in Sardinia is never manured at all, but that in this region its natural fertility is such that it bears every year, or that one year's fallow every three is sufficient to enable it to bear abundantly—one year corn, the next Beans, Peas, Vetches, or Flax. The most interesting feature in this plain is the singularly luxuriant hedges of Opuntia or prickly Pear, which remind us of what we read of in Mexico, and give a peculiarly southern character to the landscape. The roads, lanes, and properties are lined with hedges of this Opuntia, from eight to fifteen feet high, and from six to ten feet wide. They thus present an impenetrable fence to cattle and man, and give a very tropical look to the country. Inside these grotesque prickly fences grow many wild plants, especially a Clematis and our old friend the Blackberry, who, flourishing in the alluvial soil, more than holds his own. He entwines himself between the prickly branches in every direction, and at times seems to all but smother his southern friend.

Otherwise there is no trace near Oristano of subtropical winter vegetation, and spring was no more advanced on April 26th than at Sassari on the 22nd. Evidently the cold winds rush down from the north in winter over the high plains and lower its temperature—like that of Sassari—below that of the Genoese Riviera, or of the mountain-sheltered east coast of Spain.

The town of Oristano begins a few hundred yards beyond a bridge which crosses a good sized river, the Tirse, the largest I saw in Sardinia, and the origin of the lagoons and marshes, which render Oristano so unhealthy. In its struggles to reach the sea, to get over or round the bar which the winter storms form at its mouth, it overflows the entire country, and forms ponds and lakes near the shore.

The town is formed by a number of streets grouped round the old cathedral—a really fine monumental edifice. In the immediate vicinity of the cathedral there are some good houses inhabited by some of the old Sardinian nobility and gentry during the winter and spring. In summer and autumn all who can, fly from the malaria and spend these seasons in the higher mountain regions, in a very rough manner. Oristano, however, appears to be rising in prosperity, for there were several new streets, and new houses all small. The railroad, no doubt, has had a deal to do with this change. In former days it was a large, populous, wealthy, and important city; probably the surrounding country was then better drained, and the exit of the river into the sea more cared for.

There was some fête when we arrived, and the only "Albergo" was already full. But we had, fortunately, a letter of introduction to the Mayor of the town, a very amiable old retired Sardinian Colonel. He kindly took us under his wing, and secured us rooms over a café, just opposite the Opera, for the Oristanians have just built and opened a very pretty little opera-house, with a very tolerable Company! They were performing all the leading Operas of the day, very respectably it was said. At Sassari, the Prima Donna, whom I went to hear, was a young English lady, with a really good and fine voice, and all the City was most enthusiastic about her. These remote Italian towns must be very good schools for an enthusiastic votary of the art, such as this young lady clearly showed herself. In the smallest she is certain to meet with a sympathetic, musically-cultivated audience.

Although there was no evidence of winter warmth at, or immediately around, Oristano, an excursion to the Orange groves of Milis showed me that all that was wanting was protection from the north. Milis is situated at the foot of a mountain spur, running east and west, about twelve miles north-west of Oristano, and looks due south.

This Orange wood or orchard, two miles in length by half a mile in width, has been celebrated for ages, and supplies all Sardinia with Oranges. It belongs principally to the Marquis of Boyle, a Sardinian nobleman. A never-

failing rivulet of mountain water runs through, and enables the cultivators to put the entire orchard under water every fortnight during the summer. If an Orange tree is to produce good fruit it must be watered thoroughly during summer at least twice a month. Thus these trees have the all-important shelter from the north in winter, water and intense heat in summer.

I spent a day in this Orange grove, and examined it very carefully. The trees are planted very near to each other, only eight or ten feet from stem to stem; they are mostly old trees, a hundred years or more, judging from the diameter of the bole low down—one, two, and even three feet. They are not beautiful trees like those at Milianah in Algeria, for they are generally allowed to divide into two or three branches, two or three feet from the ground. These large branches run up fifteen to twenty feet, and form a canopy of fruit-bearing branchlets, which unite with those of the surrounding trees, and form a complete shade on the ground; indeed moss was growing on it in many places.

The impression on the beholder is, that the trees are too numerous; but I was told that the experience of centuries has proved that this is the best plan to grow them, in order to keep the ground cool and moist during the fierce glare of the summer's sun. No manure is ever given, only water; the soil is a deep alluvial one, and the situation is ten miles from the sea. The head cultivator told me that the Orange trees raised from seed were peculiarly liable to die, just as they had become good bearing trees, of a disease he called *secco*. The small branches at first, and then the larger ones, dry up and wither, and in a few years the entire tree dies. He showed me among scores of trees intermingled those that were dying without the trace of grafting, whereas those that bore the trace of the graft near them were sound and healthy. Now, he said, he never planted other than grafted trees. I ate a number of the Oranges gathered here, and found them very good. The Orange tree is a tropical tree, and finds here in summer the tropical heat that suits its constitution, whilst

the mountains behind shelter it from the north winds, which prevent its growing in most regions of Sardinia. In the very midst of this Orange grove I found a few Lemon trees in full bearing; they were the only Lemon trees I saw in Sardinia. On the Riviera, from Nice to St. Remo, they are, as we have seen, the principal agricultural product.

Oristano exhausted, we took the railway to Iglesias, a town in the south-western extremity of the island, the principal centre of the mining interests. Iglesias is reached by a branch, which leaves the main line between Oristano and Cagliari, at about an hour's distance from the latter city. Thus we descended, along the level marshy plain, which separates the two cities, to within twenty miles of Cagliari, and then leaving it, ascended into the mountain region. The main line runs nearly at a dead level, apparently only a few feet above the sea, and the watershed of the mountains on each side falling into this plain, without being able to find an exit, gives rise to extensive marshes. No doubt within comparatively recent geological times this plain was below the sea-level, and then the south-western part of Sardinia must have been an island. Notwithstanding the marshy, unhealthy character of the plain, it was evidently a property owned by some one, and vigorous attempts at cultivation were being made wherever the slightest elevation appeared to make drainage feasible. There were also, here and there, droves of ponies and of other cattle. The malarious season had not yet arrived (April 25th), and the inhabitants of the sparse villages had not yet retreated to the mountains. Crowds of picturesque people got in and out at every station, and appeared much to enjoy the still novel mode of locomotion.

Soon after leaving the main line a gentle rise commences, ponds and marshes cease to show themselves on each side, and dry land appears. Simultaneously villages are seen, and around them the southern evidences of fertility in the shape of Olive, Almond, Peach, and Pear trees, of Vines and of cereal cultivation. The natives were invariably dressed in sheepskin vests, with the national black woollen

petticoat, or skirt, and leggings. They were evidently clothed for cold not for warm weather, and in woollen garments calculated to protect them from chills.

The gradually increasing extent of cultivation showed that we were approaching a centre of civilization and prosperity, a fact which became evident when we reached Iglesias. This little town, situated on the south-eastern slope of a mountain spur five hundred feet above the sea-level, is the capital of the mining works of this part of Sardinia. The district is rich in minerals, principally carbonate of zinc or calamine, and lead containing silver. Within the last ten years scores of mines have been opened by Italian, French, and English companies, in this the south-western angle of Sardinia, comprised between Oristano, Iglesias, Cagliari and the sea, the richest mineral region of the island, whilst many more have been conceded and will soon be opened. Several of these companies employ from five to twelve hundred workmen, and are making very good returns. The zinc and lead lie generally at the point of contact of a calcareous rock which overlies the silurian schists of which the mountains are formed. Thus, in most instances, the mineral is easily reached, merely by driving galleries in the flanks of the mountains. The ancient Romans were aware of the mineral riches of this part of Sardinia, and traces of their workings are found in many localities both in this and in other parts of the island. The zinc and lead deposits are not confined to the Iglesias region, they are found in nearly all the mountains. There are many mines now at work in the northern and western ranges.

As the entire mining population centres at Iglesias, from whence all their wants are supplied, and from whence the new roads made and making depart, large sums of money are poured into it, and on every side there is the evidence of material prosperity and well doing, numerous shops and new houses, and a well fed and healthy population. Iglesias is all but out of reach of malaria, and moreover we were just at the end of winter, evidently bracing enough and cold enough to bring roses to the cheeks of the children and of the women. There was a freedom and ease about the

latter which argued constant communion with the world. In the northern villages and small towns the women constantly draw their veils over the lower part of their face, concealing their mouth as in the East. Here nothing of the kind was seen; they walked about with as little shyness, and with as much self-possession as the men.

We found a tolerably decent inn of the usual Italian kind, but I had brought a letter of introduction from a mutual friend to an English gentleman, the head of several of the mines, and he kindly insisted on our taking up our quarters with him. Once installed in his hospitable house we were as comfortable as we should have been in our own home, and greatly enjoyed the change. My new friend had been apprised of our advent, and had organized an expedition into the mountains, to visit the mines under his management, to which we assented with joy. As there are no roads, only horse tracks, and as but scanty supplies are to be found at the end of each day's march, due preparation had to be made. Whilst my kind host was thus preparing for our comfort I employed the interval in exploring the town and its vicinity.

Iglesias must have been a place of some little importance in former days, commanding the plains on the one hand, and the mountain region, of which it was the key, on the other. There are still extant the ruins of a large and powerful fortress built on the most elevated point, which overlooked the town and its approaches. Formerly there were no roads whatever into the mountains, merely horse tracks, now many good ones have been made, or are being made by the companies that are working the mines, and by other companies that have bought forests, and all radiate from Iglesias.

The immediate vicinity is very fresh, green, and fertile, presenting many orchards of fruit trees—Olives, Almonds, Peach, Pear, and Vines, and a few small Orange trees in sheltered nooks. There are many pretty country walks in the vicinity, rendered very quaint and foreign by the hedges of Prickly Pear. A walk that I took, on a beautiful mild evening, along a footpath six feet wide, winding up the side of a hill on a gentle slope, presented

one of the loveliest scenes I ever witnesssd. The Opuntia hedge was from six to eight feet high, and above six feet broad at its base. Growing with wild luxuriance amongst the ramifications of the Prickly Pear, twining round them in every sense, filling every vacant space, every corner, in luxuriant profusion of growth and blossom, were the wild creepers and flowers of the district, amongst which I marked the following :—Vinca major, Clematis, Smilax, a Bryony, Honeysuckle, Convolvulus, coloured Peas, Asparagus, Borage, Hemlock, Fumitory, Euphorbia, Mustard, wild Mignonette, Oats in flower, Marigold, a Globularia, Poppies, yellow Corn-flower, variegated Thistle, Pellitory, Woodruff, and Chickweed. There was not a sprig of Ivy, the soil being entirely schistic, without lime. The comparison of the date, April 26, the epoch of perfect flowering of the above plants in southern Sardinia, with their date of flowering in England or elsewhere, will give a very correct idea of the difference of the spring climate in the different localities.

The start for the mountains was made April the 27th, after breakfast. We had about fifteen miles to ride on Sardinian ponies to reach our destination, the lead mine of Aqua Rese. The road, a mere rough stony track, carried us over the last slopes of the higher mountains, through a district denuded of trees, but covered with the usual Mediterranean brushwood of schistic and siliceous soils. I was told that my wiry little Sard horse was as mild as a lamb, provided he was not allowed to approach any other horse. In the latter case I was to be cautious, as he nourished a deadly hatred to his species, was apt to rear, to fly at them like a bulldog, to fasten on them with his teeth, and to do his victim great injury! As I had seen this process performed on a memorable occasion in Corsica, I was not particularly anxious that my pony should repeat it whilst I was on his back, so I kept at first at a most respectful distance from my companions. Finding him, however, thoroughly tractable to the hand, I gradually gained courage, and became filled with admiration for his good points. He really proved with me as gentle and tractable as a lamb; and, moreover, so sure footed, so strong of limb, that we ascended precipices like the side of

a house, descended slopes all but perpendicular, and crawled up and down among stones and rocks many feet in height; indeed, he behaved like a cat on a house top, with me on his back. One gets accustomed to everything, and although at first rather nervous and alarmed, long before the day was over I was as self-possessed as a tight rope dancer.

We were received at the mine of Aqua Rese by the director, a German engineer, who spoke English like a native. He made us thoroughly comfortable and at home in his little house, built on a terrace on the mountain side, near the works. This terrace overlooks a picturesque winding valley, which ends on the sea shore about nine miles distant. The owners of the mine have made a good carriage road through this valley by means of which the metal is taken to the western sea for shipment. After dinner we examined the mine, which is very interesting. These mines are generally worked, as already stated, by galeries excavated from the mountain sides, the communication between different galeries being sometimes established by shafts. I found our host a very scientific well-informed man, full of mining lore, indeed, saturated with it. He was a scientific chemist and geologist, but all his knowledge on these subjects seemed to take instinctively the direction of mining and metallurgy. He had practically studied mining in many parts of the world, on the continent, in Asia, in Batavia. Study, he said, was the great solace of his solitary life, for he was all but alone for eight months of the year, surrounded by an ignorant and lawless mob of workmen. There were many hundred men under his charge, and as the mining pay was good, it attracted not only Sards but thousands from the continent; some of them were honest and true, but many were the scum of the continental cities, which they had made too hot for them. The only way to secure discipline was to exact implicit obedience, and to dismiss instantly those who resisted. Sometimes he had to dismiss twenty or more at an hour's notice, regardless of their black looks and of their muttered threats. In his room our host had quite an armoury of guns and revolvers, ready for emergencies, he laughingly remarked.

In working the mines, contracts are entered into with sub-men at so much the solid metre, the price depending on the facility or difficulty of extraction, and on the quality of the ore. These sub-men engage the workers and divide the receipts with them according to certain rates. During the malaria months, from June to October, the mines in Sardinia are all but closed, and nearly all the officials have a holiday, withdrawing to the mainland for safety.

The next morning we again started after breakfast for another mine, Pala Guttura, about sixteen miles distant, in the midst of the higher mountains. Our track at first again took us over a purely schistic formation, and the vegetation was the same as the day previous. The scenery was very like that of the highlands of Scotland, only instead of Heather we had the Corsican maquis, Lentiscus, Cytisus, Asphodel, Ferula, Arbutus, Mediterranean Heath, and in moist localities purple Cyclamen. Then appeared Myrtle, Clematis, Smilax, and Ivy, also wild Pear-trees sown by birds, showing that lime was beginning to mingle with the schistic soil; as it became more and more a component, these plants increased in luxuriance of development.

We were constantly climbing alongside and over mountains 1000 or 1500 feet high, or descending into valleys nearly as deep. In the early part of the day these mountains were all but denuded of timber, which had been ruthlessly cut down, for there were thousands of large stumps dotting the mountain side. It appears that ten years ago a Leghorn merchant bought many square miles of mountain forest from the Government for 14,000*l.*, to be paid by instalments. He then made a contract for charcoal with the Spanish Government, and with the money thence received paid his instalments as they fell due, gaining a million of francs (40,000*l.*) on the transaction. His energy is to be admired, but he ought never to have been allowed to denude the mountains entirely of timber without replanting. My companions assured me that the soil, no longer retained in place by the roots of the trees, and protected by their leaves, will, all but to a certainty in this climate, be carried away by the torrential rains of winter. In that case the mountains will become denuded and sterile for

ever, as is the case with so many mountain summits in the south, formerly covered with forests, now mere bare rocks.

On leaving the territory of this forest Vandal we entered a region where the trees had not as yet felt the axe, and soon found ourselves in the midst of the most beautiful mountain and forest scenery I have anywhere beheld. The principal trees were the Ilex, or evergreen Oak, and they were the finest I have seen in the south of Europe. Many were as large and as fine, if not larger and finer, than any English Oaks I ever met with in a nobleman's park. In their efforts to get to the light, from the mountain sides and valleys, they had often twisted themselves into the most fantastic shapes. In one deep and magnificent gorge the luxuriance of vegetation was greater than anything I had witnessed before in any land, and recalled to my mind the descriptions I have read of virgin tropical forests. The wild Vines, Ivies, Clematises, Honeysuckles, Blackberries, Sarsaparillas, instead of being simply creepers, had become lianes—ropes; they ascended into trees forty or fifty feet high or more, twining round their stems. It was perfectly delightful to me to see our Blackberry quite equal to the occasion, and climbing as energetically, as vigorously as any, the wild Vines excepted, for I could not but look upon him as a countryman, even in a virgin forest in Sardinia. Ivy, Myrtle, Cytisus, Ferns, Polypodium vulgare, Filix-mas, Asplenium Adiantum-nigrum, crept out of every crevice of the limestone rock, and waved their fronds in the air, whilst the beautiful purple blossom of the Cyclamen covered the ground as Daisies do in the north. These valleys must be very moist for many months of the year, for the trunks and the branches of many of the trees were covered with moss, and in this moss was growing abundantly Polypodium vulgare. In the centre of this wild lovely valley was an abundant brawling stream of pure mountain water, leaping over the stones, as in Ross-shire; only the water was not peat stained, for peat and Heather were entirely absent. In all parts of this wild valley I found growing freely Asplenium Adiantum-nigrum, Pteris aquilina, Asplenium Trichomanes, as also a large white

Amaryllis. The Ivy was often so luxuriant in its growth that it covered the sides of high cliffs.

Pala Guttura, where we arrived in due course in time for dinner, reproduced Aqua Rese, only under still more picturesque and fascinating conditions of mountain scenery. The galleries leading to the mine—one of carbonate of zinc—are also in the flanks of the mountain, and the director's house is also on a terrace adjoining. I can but compare it to a shooting lodge in a remote corner of the Highlands of Scotland. Within a few yards a very abundant spring of pure cool water issues from the mountain, and rushes down a deep ravine which it has furrowed, in the midst of a thicket of verdure which it has created. This spring is a great boon to the locality, as good water is very scarce over the greater part of Sardinia, owing, no doubt, to the porous schistic character of the soil. At this mine the sub-director was a handsome young Italian, son of a Venetian nobleman. Instead of living in idleness he had put his shoulder to the wheel, a good sign for "Italia Unita."

Whilst at Pala Guttura I learnt that a great part of the forest we had crossed in the day had recently been purchased from the Government by the proprietors of the mine, in order to make charcoal for their works. The sum paid, six or eight thousand pounds, for many thousand acres of forest-covered mountain land, some of which, situated in the valley, is arable, seems very small to us. It appears that a large portion of Sardinia belonged to the "communes" or parishes, and that recently the Government, for the public good, has expropriated them and taken possession of the lands, paying a nominal indemnity, founded on present value; these properties are being gradually brought to market. There are sales every six months, and immense tracts are being sold at mere nominal rates. The minerals, however, do not go with the soil; the Government gives a mining licence to the first person who discovers a mine and applies for a licence, with a power to expropriate the owner of the land required for the works on payment of an indemnity.

The following morning we returned to Iglesias by another route, through a mountain and forest district as beautiful

as the one previously traversed. A very enjoyable picnic amongst the rocks on the seashore marked the next day for ever with a white stone, and then we departed for Cagliari, after taking leave of our worthy host. Thanks to his kind reception of us we had an opportunity of seeing the wild virgin forest scenery of Sardinia, which could scarcely be reached except under such auspices. I saw no villages, no habitations wherever we went, and no population except that connected with the mines. There are villages, but I am told they contain no accommodation of any kind for strangers—nothing but the native huts. The lovely highlands of Sardinia may, thus, be considered inaccessible, except under some such delightful auspice, to all except sportsmen accustomed and ready to sleep in sheds, barns, or in the open air. It is said that these mountain forests are full of wild boars, of deer, and of game in general.

I heard of an English nobleman who came to Sardinia in a large steam yacht, anchored in the little ports, hunted all day, and always came back to his yacht to dine and sleep, a most comfortable and satisfactory plan for seeing and enjoying the wild beauties and the sport of Sardinia.

Cagliari is rather a fine city, partly situated on a rock 300 feet above the sea, not as unhealthy as Oristano, although surrounded by ponds or lakes, but they are salt, and appear not to produce fever to any extent. Although 150 miles more south than Sassari, and only 150 miles from Africa, I found the vegetation no more tropical, no more advanced than at Sassari. A north-west wind was blowing all the time I was there, and it was very cool and pleasant. I was told that the winds in winter and spring generally blow from that direction, that is, down the central Sardinian plains from the north, and make the climate cool but rather damp. Whilst I was there, from the 1st to the 3rd of May, the temperature at night was below 60° Fahr., and in the day, in the shade, it did not rise above 68°; yet the sun was very hot, all but insupportably so. I was told that when the wind changed to the south, which it might do any day, the heat would be terrific, going up to 100° or 104° in July and August.

I carefully examined the public garden, which is below

the ramparts, in a very sheltered spot, as at Sassari, and found it principally planted with hardy or half hardy evergreen trees and shrubs, Ilex, Cork Oak, Euonymus japonica, Justicia, Box, Magnolia. There were also Schinus Mulli, Ailanthus, Populus alba, Cytisus, Acacia, Ficus elastica. There were a dozen small Orange trees, two or three feet high, in a sheltered corner, surrounded by a hedge of Euonymus, and half dead; the extremities of the branches were quite dead. On looking from the ramparts on the town, I saw in some courtyards below me, surrounded by the houses and by walls fifteen or twenty feet high, some Orange trees, which looked very healthy and well. They evidently required protection of this kind—to be in a species of well—to resist the north winds that course through Central Sardinia in winter, even here, in the southern part of the Mediterranean, not much more than a hundred miles from the coast of Africa.

Cagliari has all the aspect of a small capital. The town ascends from the shore to the upper part of a hill or rock three hundred feet high, which is surrounded by strong walls built by the Pisans. There is thus an upper, a middle, and a lower town. In the upper town there are: a fine cathedral, a citadel, a handsome university and museum, Government, archiepiscopal, and private palaces, and large, fine houses. The view from the citadel is magnificent; to the north the Campidani, or plains of Central Sardinia, east and west large salt water lakes, beyond them on each side fine mountains, to the south the open sea. The women are good looking, and Spanish in expression. The gala costumes of both men and women of the peasant class are picturesque; those of the latter are embroidered with satin and gold, and bedecked with jewels. Finally, Cagliari is lighted with gas and supplied with pure mountain water by an English company, which is paying a good interest to its spirited projectors. For more circumstantial details respecting Sardinia and the books written thereon, I would refer to Murray's Guide.

My object in making this journey to Sardinia was to study its climate, as interpreted by the vegetation in spring, and I gained thereby the information of which I was in quest. Sardinia cannot be recommended to invalids, or

indeed to any one, as a sheltered winter residence. The mountains run principally from north to south, not from east to west, and are not very high, so they give but little protection from north winds. Indeed, the high plains which occupy the centre of Sardinia in the north, and the low plains which occupy the centre in the south, with the mountain ranges on each side, offer a kind of bed to the north-east and north-west winds which course down the island, with violence, most of the winter. These winds are not only cool but damp, as they have passed over a tract of sea sufficiently extensive to moisten them without warming them. There may be nooks and corners in the island, at the south base of mountains, with lateral protection, east and west, where the winter passes in sunshine and shelter; but they are unknown, and inaccessible even if they exist. To tourists, however, when the cold winds of winter are over, and before the heats of summer have commenced, that is, in the months of April and May, such a journey in Sardinia as I took is very enjoyable. They must, however, be able to put up with very inferior hotel accommodation, and ought to have introductions that will take them out of the beaten track, as was my case. Before long, when the railroad is completed from Porto Torres to Cagliari, the inns will, no doubt, improve, and Sardinia may become a high road to the southern Mediterranean. Cagliari is only sixteen hours by steamer from Tunis, twenty from Naples, and twenty-four from Palermo.

In conclusion, I would add that a fortnight's careful investigation of the vegetation of Sardinia in spring confirmed the convictions formed after the examination and study of the other large islands of the Mediterranean—Corsica and Sicily. North-east and north-west winds in winter, from December to May, retain their full power in unprotected localities in the Mediterranean basin, even in its southern islands. When mountain protection and shelter give the sun fairplay, as at the Orange groves of Milis, the temperature is as mild as on the protected north Riviera shores, not milder, but the atmosphere is moister from insular position.

I embarked at Cagliari on the 3rd of May for Tunis, on my way to the island of Malta.

CHAPTER XIV.

MALTA.

THE VOYAGE FROM TUNIS—MALTA—PHYSICAL GEOGRAPHY—VALETTA—VEGETATION—THE INTERIOR—CULTIVATION—THE ST. ANTONIO GARDENS—WINDS—RAINFALL.

After visiting Tunis, Carthage, and their vicinity, I wished to proceed to Malta. The only regular communication between Tunis and Malta is by a little screw steamer—the *Lancefield*, a mere small steam yacht, which rolls fearfully, but is swift and safe. It plies weekly between each destination, but on this occasion its usual arrival at and departure from Tunis was delayed. I had been nearly a week there, had minutely examined the town and the neighbouring country, and the hotel accommodation was very bad. Moreover, there was absolutely nothing to do, for I had not leisure to examine the interior. I became therefore very anxious to get away, and through the kindness of the vice-consul, secured a passage to Malta in a large merchant ship, which had called at Tunis to unload cargo on its way to Alexandria. The vessel, a steamer, had eighty tons of gunpowder on board for the garrison at Malta, but I was too anxious to depart to be influenced by such a minor consideration! On this fine ship, heavily laden, going at six or seven miles an hour only, with a strong north-west or west wind, we had a beautiful passage. Although the wind was howling, the sky grey, and the sea rough, we moved along, wind behind us, as steadily as a church, could eat and drink and be merry, and arrived at Malta May 9 after thirty-four hours' navigation. On this voyage I was again much struck by the difference between steaming in a large ship and in a small one. At present in the Mediterranean everything is sacrificed to speed; so the ordinary passenger steamers, all

screws, are made very long and very narrow, drawing very little water. They are like cigars, and roll fearfully if the sea is in the slightest degree agitated, when a larger and steadier vessel would scarcely feel it. This makes seafaring more trying in the Mediterranean than it used to be in the days of broad paddle-wheel steamers.

Malta is a calcareous rocky island, which rises a few hundred feet only above the sea, and is situated in latitude 35°; it is fifty-eight miles from the nearest point of Sicily, one hundred and seventy-nine from the nearest coast-line of Africa, forty-four miles in circumference, seventeen miles in greatest length north to south, nine miles in greatest width east to west. A slight rocky elevation or ridge, from north to south, separates the island into two unequal portions, the eastern being the more extensive and the more populous. The surface is undulating and uneven, although the general character of the island is that of a plain, nowhere rising more than six hundred feet above the sea.

In the town of Valetta, overlooking the magnificent harbour, there is but little vegetation; still there are some squares planted, and a small straggling garden on the ramparts. Moreover, wild plants grow here and there in nooks and corners. The vegetation appeared to me identically the same as in other parts of the Mediterranean —at Athens or Sardinia, at Corfu, Tunis, or Smyrna, and the stage of growth the same as in these and other similar regions at this epoch of the spring (the second week in May). My explorations commenced on the 10th.

In the rampart garden I found Ailanthus coming into leaf, Schinus Mulli in flower, Oleander in bud, large Mallow in flower, Euonymus japonica in flower, Pomegranate in leaf, Carouba trees, Sida arborea, Sparmannia Africana, Buddleia Madagascariensis in flower; Roses, hybrid, Banksia, multiflora, in flower; Justicia arborea, Nasturtium, Stock, Petunia, Verbena, Marigold, Pelargonium, Larkspur, Virginian Stock, in flower; Hollyhock, first flower opening; Fig in full leaf, fruit swelling; Opuntia, and Aloe. Nearly all these had been flowering in my garden at Mentone ever since February or March.

In the garden of the Governor's town palace, surrounded on all sides by buildings, a mere planted courtyard in the interior of the town, were many of these plants and flowers. In addition I noticed a magnificent Araucaria excelsa at least fifty feet high, planted in 1858 by Prince Alfred, and then only seven feet in height. The walls were covered with a Bougainvillea in full bloom, a beautiful sight. The vigour and luxuriance of this plant showed that the calcareous soil and the climate of Malta suit it thoroughly. There was also Jasminum revolutum, Bignonia Capensis in flower, Fuchsia not in flower, Oranges just set, Loquats ripening, Casuarina flourishing, Cereus grandiflora the same.

The following day I took a leisurely drive to Citta Vecchia, the former capital, six miles from Valetta, nearly in the centre of the island, on one of the highest points of the central ridge. On a subsequent occasion I drove right through the island to St. Paul's Bay, at the south-western extremity, carefully examining the aspect of the country and the vegetation all the way. Seen from a height, as for instance from the heights of Citta Vecchia, the island of Malta looks barren, and thence, no doubt, it has been described as a barren rock. The most cursory inspection, however, shows that this is a gross error, and that the accounts of soil having been transported from the continent are totally devoid of foundation. The error, no doubt, originates in the fact that the entire island is divided into fields of a few acres each, as in England, that these fields are bounded by stone walls four or five feet high, and that scarcely any trees higher than the walls are to be seen. Higher trees exist, but they are hidden in gardens surrounded by walls fifteen, twenty, or twenty-five feet high. Thus an observer may pass through the island, and under the very walls of these gardens, without seeing a shrub or a tree therein contained. It is the winds that course over the low sea-girt island from every point of the compass, that necessitate this extraordinary amount of shelter. No trees except the pyramidal Cypress, and scarcely that wind-proof Conifer, appear able to resist their influence, and to grow without the protection of walls or of surrounding buildings.

If, as we pass along the road, we look over the stone walls, we at once perceive that every enclosure contains soil cultivated with extreme care, and producing crops abundant although meagre and low in habit. I observed principally bearded Wheat and Barley turning colour, Potatoes, Vetches, Clover, and Beans. The value of manure is clearly appreciated, for many fields had been ploughed and were covered with heaps of manure about to be dug in. I was told that the second summer crop is Cotton, which is extensively planted. In all these fields there was not a weed to be seen, they were as clear as a gentleman's garden in England just after it has been trimmed.

It is said that more than two-thirds of the island is under cultivation, the rest being rock, where it rises to the surface in ridges and elevations, but that the area of cultivation is gradually being extended. I noticed in several places the process of formation of new fields, and found that it is very much the same as what I am doing among my Grimaldi rocks at Mentone. Calcareous rocks are always full of fissures, cracks, and crevices, in which, in the Mediterranean climate, Thyme, Rosemary, and grasses grow. In the course of centuries their decay forms earth, which collects in greater or less quantity according to the size of the crack or crevice. When these rocks are broken or blasted the earth is found, and forms a very good soil. The broken rocks serve for supporting or boundary walls, the earth is spread on the ground to form the new terrace or field, with whatever addition can be found, and with the smaller stones. The latter disintegrate in time, manure is added, and vegetation begins.

Inside villages, inside courtyards, in spots two-thirds or three-quarters surrounded by houses or outbuildings, under the brow of rocks or ridges running from east to west, at the bottom of now dry ravines and watercourses—wherever, in a word, there was shelter from wind, and especially from north, north-east, or north-west wind, I found sparse, small, stunted specimens of the familiar vegetation of the Mediterranean: Pinus maritima and Halepensis, Cupressus pyramidalis and macrocarpa, Ailanthus glandulosa, Populus alba, Phytolacea dioïca, popularly called Belombrosa in

Italy, most frequently small Fig trees, Schinus Mulli, Lentiscus, Carouba, Daisy, a small Euphorbia, a Mallow, Conium, the yellow Chrysanthemum segetum, a variegated Thistle, and a species of Silene. All, however, were small, as if stunted in growth from want of food, and all seemed to be looking for shelter from the wind.

Through the kindness of a friend of former days, Dr. Innes, whom I found at the head of the forces at Malta, I was introduced to the Governor, Sir Charles Straubenzee. Sir Charles most courteously asked me to see his gardens at St. Antonio, the Governor's summer palace, and I examined them minutely with very deep interest.

I had passed through the village of St. Antonio the day before without even suspecting that it contained an extensive garden in connexion with this summer palace. The only external trace of a garden was a row of tall pyramidal Cypress trees. Once inside the cause was revealed; where not bounded by the buildings of the palace it was surrounded by a wall at least twenty-five feet high. Inside it seemed as if a magician's wand had transported me to another country, to a real garden of Eden. All the flowers named in this and former chapters as flourishing in winter and spring in the Mediterranean region were there, growing and blooming with extreme luxuriance, indeed with greater luxuriance than I had seen anywhere before, not even excepting Malaga, the sheltered valleys of Corfu or the Genoese Riviera, although I was told by Sir Charles that the soil was neither good nor deep.

There was a large tree of Erythrina coralloides, larger than those I saw at Malaga, the only region of the Mediterranean where I have seen them as timber trees; a Ficus elastica, also a timber tree, rising at least fifty feet, as high as the house. Both these trees Sir Charles told me reminded him of China and the East, as they were as large as those usually met with there. A Bougainvillea covered one side of the house with its deep scarlet bloom. The intensity of the light and sun in the Mediterranean appears to give the flowers this deep scarlet hue. I at first thought it was a different species, until, flowering one in a glass-house at Mentone, I found that the bracts growing rather

in the shade had the hue of our Bougainvillea spectabilis, whereas the bracts of the same plant immediately underneath the glass had the usual deep scarlet hue—as deep as that of the blossom of the Verbena imperialis. Maréchal Niel and Safrano were in full bloom, as were many hybrid Roses, Bengal, Banksia, and multiflora, in large bushes and flowering in masses; Euphorbia splendens and Russellia juncea occurred as bushes covered with flower. There were also several large plants of Cycas revoluta, Bignonia jasminoides, Capensis, capreolata, and Ficus stipulata or repens, covering large walls. Sparmannia Africana, Justicia arborea, Habrothamnus elegans, Abutilon Malakoff, Vinca major, Lonicera flexuosa japonica in flower, Ivy very luxuriant; Astrapæa Wallichii, with large showy flowers; Cephalotaxus Fortunei, large healthy plant; Cestrum cauliflorum and nocturnum, also good; Hibiscus, Althæa, Melianthus major, Iochroma tubulosa were among the plants most conspicuous here. Among trees there were Paulownia and Melia Azedarach in flower, immense and most beautiful. One magnificent tree more especially struck my attention; it was labelled Prosopis flexuosa. This tree was at first glance like the Carouba, but it was larger, more majestic, with finer leaves. I have never seen it before, unless it be the same as the Prosopis Siliquastrum met with at Madrid.

In a separate garden or orchard were hundreds of bushy Orange trees, with boles one or two feet in diameter, about fifteen feet high, and loaded with fruit. There was a grove of Loquats, with the fruit ripe and sweeter and better than I had ever tasted before. This orchard was protected by walls, like the garden, and abundantly supplied with water—irrigated every ten days, I was told, all summer. It appears that there are in Malta many gardens and orchards like these shut up within high walls, and that it is in these the Orange trees are grown. Previous to this information I had wondered from whence the Oranges for which Malta is so celebrated came. I had perambulated the island in every direction, and the only Orange trees I had seen was a group of sickly representatives of the species in a square near the Cathedral at Valetta.

The above facts give the key to the climate and vegetation of Malta. In winter and spring it is ravaged by north winds, which blow over it from every northern point of the compass, just as they blow over the small islands of the Grecian Archipelago. From its lowness, and the absence of mountain ridges running east and west, and giving protection at their southern base, it offers no shelter to vegetation but that which man constructs. Thus, the tree vegetation can no more hold its own than in one of our northern Hebrides, and it is, consequently, all but absent. These winds, cool and moist when from the north, check vegetation in winter in all exposed situations, although the night temperature is higher than on the northern shores of the Mediterranean. Owing to this fact, the general unprotected flora gives no evidence of a more southern climate; at the same time, the summer heat being much greater, if artificial protection be given, as at the St. Antonio gardens, the subtropical vegetation of the more sheltered regions of the Mediterranean flourishes with extreme and unusual luxuriance. Perhaps the moister island atmosphere of Malta also tends to encourage vegetation in sheltered spots.

The rains in winter are frequent and abundant, especially in December, January, and February—a fact which implies that they come with north-east and north-west winds, as those winds predominate in mid-winter in the Mediterranean, and although dry on the continent become moist in crossing the sea. In summer it scarcely rains at all, so that, as there are no rivers, and not many springs, the rain has to be stored in tanks for summer use. Dew, however, is said to fall heavily in summer, and to supply the place of the rain, which means that the air is very moist even in the greatest heat of summer. This is always the case in islands, as the wind must come over water —sea or lake—whichever way it blows, and has thus imbibed moisture. There are great storage works for water all over Valetta, and indeed all over the island. In the vicinity of Valetta I saw an army of workmen apparently disembowelling a street. They had made an immense excavation, occupying its entire length and

breadth, and I was told that it was merely one of these tanks in process of formation.

According to Dr. Davey, quoted by Dr. Scoresby Jackson, the maximum and minimum for 1833 at Valetta were :—

	Min.	Max.		Min.	Max.
January . .	50·7	54·6	July	74·	76·
February . .	52·	57·	August . . .	76·	77·
March . . .	53·	58·	September . .	71·	73·
April. . . .	56·	61·	October . . .	66·	70·
May	62·	68·	November . .	59·	63·
June	73·	73·	December . .	55·	60·

The principal fact conveyed by these figures is the one already noticed: the greater warmth of the nights in winter as compared with the night temperature on the north shore of the Mediterranean. The difference in winter at Malta appears to be seldom more than five or six degrees, whereas at Mentone it is usually from eight to ten, and on the Upper Nile, in latitude 22° to 25°, according to Dr. Dalrymple, it is from twenty to thirty! This latter fact shows the great difference between continental and insular, or maritime regions. In the summer, as in the Mediterranean basin generally, the difference between night minimum and day maximum is only one or two degrees.

I was about a week at Malta, and, after a minute survey of the island, and of its vegetation, came to the conclusion that it presented none of the conditions of shelter and protection from north winds that I am in the habit of considering essential to a winter sanitorium in the Mediterranean. Moreover Valetta, where all strangers reside, is a large town, with a large garrison, and presents all the usual diseases, zymotic and other of large towns. Fever of a low typhoid form is common. Such being the case, notwithstanding the great social advantages it presents, its English comforts and appliances of every kind, I cannot place Malta in the list of resorts for real and serious invalidism. For those who are only ailing, without being really ill, like Corfu, it may prove a pleasant change, beneficial to the mind and to the general health.

I have described Malta without alluding to the Knights of St. John. To do so is all but sacrilege, for their memory pervades every foot of ground; but want of space must be my excuse.

PART III.

THE SOUTH SHORES OF THE MEDITERRANEAN.

CHAPTER XV.

ALGIERS AND ALGERIA.

ALGIERS AND ALGERIA—THE SEA VOYAGE—ALGIERS—THE EXPERIMENTAL GARDEN — THE TRAPPIST MONASTERY — KABYLIA — FORT NAPOLEON—BLIDAH—THE CHIFFA GORGE—MILIANAH—TENIET-EL-HAD—THE CEDAR FOREST—THE DESERT—THE VALLEY OF THE CHELIFF—ORLEANSVILLE—ORAN—DEPARTURE.

"From Greenland's icy mountains,
From India's coral strand,
Where Afric's sunny fountains
Roll down their golden sand:
From many an ancient river,
From many a Palmy plain,
They call us to deliver
Their land from Error's chain." BISHOP HEBER.

On the afternoon of April the 13th, 1869, I left Marseilles, at five o'clock, on board a fine screw steamer belonging to the Messageries Impériales, bound for Algiers. The weather was very fine, the sun shining intensely in a clear blue sky, a light wind blowing from the land, the barometer high, and the sea calm. We glided gently out of La Joliette harbour, and past the Château d'Iff, with all the passengers on deck, as if intent on a pleasure excursion. Many were looking sadly on the land gradually receding, thinking of dear ones left behind, whilst others seemed to scan the horizon joyously; their thoughts were evidently occupied by the anticipation of happy meetings. So it is in life; we are ever parting, ever meeting, sorrowful or joyous, until at last we part to meet no more on this side of the grave.

The evening was a pleasant one to all, or nearly all; long before nightfall we were out of sight of land, and we watched the sun go down into his watery couch on the western

Gravé par Erhard, 12 r. Duguay-Trouin. Paris.

Imp. Monrocq

0 50

horizon in great glory. Then we retired to our comfortable cabins, and most of us found, in balmy sleep, oblivion of the capricious sea that bore us on her bosom. The next morning there was very perceptible motion, dressing was troublesome, and on going on deck I found that the sea had become rather frolicsome, the ship rather lively, and that the sky was covered with lead-coloured, water-laden clouds hurrying up in serried battalions from the south-west to fight the sunny north-east breeze that had wafted us so far. About midday we reached the friendly shelter of Majorca, and passed between that island and Minorca. Majorca we did not even see, but we skirted the shores of Minorca for a couple of hours, near enough to scan the features of the country, and to examine, from afar, several villages and towns. The shore appeared to be bounded by high cliffs, precipitous in some places, and the landscape was all but entirely denuded of trees, as is the case with the mother country, Spain. When we advanced beyond the shelter which the large island of Majorca affords from the south-west we got into a regular gale, with a very heavy sea. Our vessel commenced to plunge and roll fearfully, at one and the same time, and I succumbed, as did nineteen-twentieths of my companions. We took to our beds forthwith, and remained in the usual agonies of sea-sickness until our arrival at Algiers the next day. I subsequently learnt that during about eight months of the year—from September to May—the passage between Marseilles and Algeria is generally of this character. Even when fine in the north part of the Mediterranean, there is generally a gale and a heavy sea in the south; and if fine on the African shores, there is generally a gale in the Gulf of Lyons.

Whilst enduring all the misery of sea-sickness I tried to analyse my own sensations, and to find why it was that I was suffering. The most approved theory is that sea-sickness is a nervous affection, connected with the brain, and with the ever-changing position of surrounding objects, relatively to the body and vision. I feel convinced, however, that such is not the sole cause, from my own personal experience. I have no fear whatever of the sea. Unless actually ill, I delight in being on it, however rough, in any

L'ALGÉRIE (ALGERIA)

Gravé par Erhard, 12 r. Duguay Trouin Paris.

Paris Imp Monrocq

Kilomètres

0 50 100 200 Kilom.

Milles de 60 au degré

0 20 40 60 80 100 120 Milles

way—swimming, in a boat, a steamer, a yacht, or a sailing vessel. If not very rough, I am quite happy and well, and can eat ravenously. Yet sometimes, when the motion is very great, especially when it is a cross motion, such as a combination of plunging and deep rolling, as on this occasion, I become desperately ill, throwing up huge quantities of bile. What has the nervous system, or change of position, to do with such sickness in one who, like myself, on land feels no inconvenience whatever from any kind of motion or gyration? Whilst lying on my back in the cabin, crossways to the ship, which rolled until twenty times in the minute the port-hole window was many feet beneath the sea, I watched the water in the decanters and basins. As we rolled the water rolled too, swashing violently from side to side, and I felt that my internal economy was doing the same. At one moment all the moveable contents of the body, liquid and solid, were thrown one way, towards the feet, as it were; the next they were thrown with violence upwards and on the diaphragm, on the liver. This latter organ is so imprisoned under the ribs, so bound that it cannot get out of the way. Tickled, pounded in this manner, it gets angry, excited, stimulated, pours out bile into the intestines and stomach, which ought never to receive it, except during the process of digestion, and this occasions sickness and vomiting. This mechanical theory would explain the real efficacy of purgatives taken a day or two before starting, which clear the liver of bile, of a bandage, which protects it from being thus pounded, of habit, of opiates, and of nerve stimulants, such as tea, coffee, wine, spirits, which deaden its susceptibility, and induce it to bear insult and actual blows without resentment. The disturbance of the circulation must also be considered.

I believe that I have really discovered the means of avoiding sea-sickness entirely in many cases, not in all, in short passages, and of preparing for long passages. The stomach should be absolutely empty before going on board, but to avoid exhaustion a good meal should be taken three, four, or five hours before, according to the nature of the food. Meat requires four, in some five, hours for complete digestion. Then, one or two hours before embarking, some very strong coffee, tea, or spirits and water, should be taken,

without milk or other food. This is to tonify the nervous system, and yet to secure emptiness of the stomach, fluids being usually absorbed in less than an hour. Once on board, repose should be enjoined, the recumbent position is best, and nothing whatever, solid or fluid, should be taken for twelve hours or more, even then very little. On this system food and the medicinal stimulant are taken *before* the stomach is exposed to sympathetic irritation, and the general economy and the nervous system are thereby invigorated. As there is nothing left in the stomach, or given to it to digest, it remains quiescent under difficulty. The reason that medicines given in sickness do no good is that they are not absorbed. Once even nausea commences the stomach refuses to absorb liquids or to digest solids, and the more there is in it the worse it behaves. The best stimulant in my experience is very strong black coffee. Scores and scores of my friends and patients have escaped sea-sickness in short passages by observing these rules, and have diminished suffering in longer ones.

About nine o'clock the second morning the martyrs downstairs were apprised that Mount Atlas was in view. The temptation was too strong to be withstood, so I crawled up, more dead than alive, to get the first look of "Afric's sunny mountains." But I was amply rewarded for the effort. Far off on the southern horizon a noble range of mountains loomed on the sky, half clothed in dense clouds. It was Mount Atlas, the Father of Geography, the son of Jupiter and Clymene, the renowned upholder of the world of the ancients. There was nothing southern, however, about the scene. Rain was gently falling, the heavens were covered with dense black clouds, the wind whistled among the rigging, and the steamer madly careered in half a dozen ways at once. We might have been outside the Isle of Skye, in view of the Cuchullin mountains, robed in dense black cloud. At midday we entered the port of Algiers, having steamed four hundred miles in forty-three hours, which is considered a very good passage.

The port of Algiers is commodious and good, formed by two jetties, the one western, the other eastern, both constructed in former days by Christian slaves, and extended and perfected by the French. For centuries thousands of

Europeans have pined away their lives under Africa's burning sun to build the works that protect this port. How many an aching heart has entered, as we were doing, their eyes riveted on this southern coast, destined merely to add a few stones to these piers, and then to sicken and die under the lash of slavery, far away from family, from home, from country.

I was fortunate enough to find accommodation at the Hôtel d'Orient—the best, indeed I believe the only good hotel at Algiers—where I met with all the comforts and elegances of Paris or London. Time being precious, I at once commenced my local studies according to a plan previously arranged. This plan comprised:—

1. The survey of Algiers and of its vicinity.
2. A journey to Fort Napoleon, a military station built in the centre of the mountains of recently-subdued Kabylia, to overawe the mountaineers.
3. An excursion due south, by Blidah and Milianah, to the desert of Sahara, and to the great Cedar forest at Teniet-el-Hâd.
4. A journey along the valley of the Cheliff, from Milianah to Orleansville and Oran.

This plan was carried out, and I shall follow it in describing my Algerine experiences.

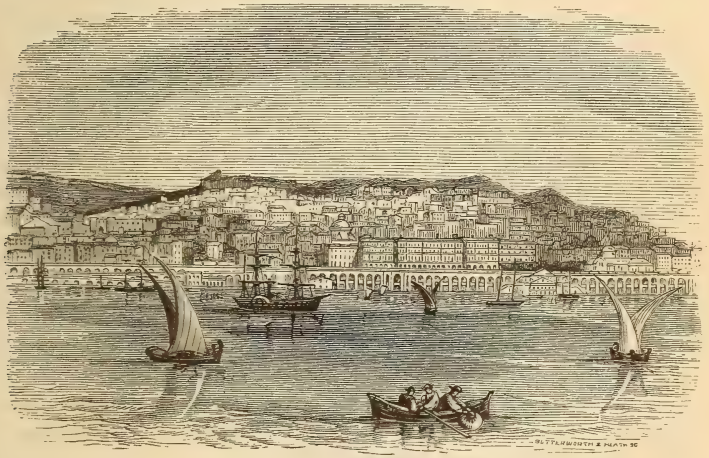
THE CITY OF ALGIERS AND ITS VICINITY.

Most of the views of Algiers that I have seen are mere artistic sketches, and give a very poetical, but very erroneous idea of the Moorish city. The photograph here reproduced is strictly true to nature.

Algiers, situated in latitude 36° 8′, occupies the western extremity, or horn, of a fine bay ten miles in circuit, on the south shore of the Mediterranean, the northern shore of the continent of Africa, and looks directly northwards. The bay is formed by a range of low hills, the Sahel, which follow the western portion of its circuit, expiring at its eastern extremity, but continuing their course along the seashore for many miles to the west of Algiers, beyond the western extremity of the bay. Seen from the sea,

Algiers looks like a white triangular sheet, with its base on the shore, its vertex on the summit of the hill. The milky whiteness of the town is owing to the houses having flat roofs, which do not appear, and to their walls being whitewashed.

In the centre of the bay, to the east of Algiers, the villas of Mustapha Superior and Inferior, the health and pleasure suburbs of Algiers, climb up the slopes of the Sahel, whilst, at the eastern angle, the expiring and receding Sahel allows the far off summits of the Jurjura mountains to appear on the horizon. These mountains, which constitute the



CITY OF ALGIERS FROM THE PORT.

eastern extremity of the first chain of the Atlas, rise to a height of seven thousand feet, are covered with snow in winter, and although sixty miles distant, are generally in view from Algiers, lending enchantment to the eastern horizon.

On the land side of the port, at the base of the town, is a fine quay, bounded by a series of stone arcades which contain warehouses and support a noble terrace or boulevard (see woodcut), on which, fronting the sea, are built the Government House, the Bank, the Hôtel d'Orient,

and other public and private buildings. This quay and promenade terrace were built by Sir S. M. Peto. Behind spreads the town, rising gradually to the Kasbah or Dey's palace, which crowns the whole. The lower part, that in contact with the promenade, the port, and the sea, is occupied by a Parisian-like square, the Place du Gouvernement, planted in parts with Palms and Bamboos (see woodcut), by French streets with arcades, like the Rue de Rivoli, and by French many-storied, many-windowed houses. Room was made for these modern buildings by the destruction of a part of the old city. Above modern Algiers is the remainder of the old town, still one mass of oriental streets and dwellings, a southern human hive, still exclusively inhabited by true Algerines.

Although we came into port with a strong north-westerly breeze and a raging sea (April 15th), we found lovely weather on land. The air was pleasantly warm, the sun gloriously bright, its ardour tempered by a slight white haze in the sky. The distant Jurjura mountains, snow and cloud-capped, glistened on the eastern horizon, and the ancient pirate city lay before us in all its strangeness, formerly a whitened sepulchre, now a stronghold of a civilized and Christian nation. After a bath, a little refreshment in the elegant, cool dining-room of the Hôtel d'Orient, the first for two days and nights, and the enjoyment of a few hours of land "equilibrium," my thoughts turned to the country I had come to see. I therefore secured the services of Mahmoud, the intelligent Arab interpreter of the hotel, and sallied forth.

The first glance at the motley assemblage that crowded the Place du Gouvernement revealed a southern land, Africa. On all sides were Arabs and Kabyle mountaineers, Negroes and Jews in oriental costume, mingled with Europeans, soldiers and civilians.

One of the strangest costumes was that of the Arab women. The face half-veiled with the yashmâk, so that the eyes only appeared, wrapped in white, they seemed walking bundles of muslin or shrouded ghosts. All the men, except the Jews, wore woollen bournous, or cloaks, like the opera cloaks of European ladies, with the hood

generally drawn over the head. Some had on two or even three of these bournous, one over the other, in various degrees of vetusty and dilapidation. The lower-class Arabs, Kabyles, and Negroes, never take them off, day or night, merely adding a second or third when the first or the second is too old and ragged to keep out the rain and the cold. Thus they become in time mere bundles of filthy rags of the most grotesque character, of which the engraving only gives a faint idea. Some of the old

VEILED ARAB WOMAN.

beggars and artisans evidently bear on their backs the remains of the wardrobe of their fathers, and of their own early youth. These rags are tied and sewn together in every conceivable manner; indeed, it is only a wonder that they hold together.

Many of the town Arabs wear a shirt or a linen tunic, fastened at the waist by a girdle, under the bournous, but country Arabs, the Kabyles, and Negroes, seem generally

to wear the woollen bournous only, with or without a woollen tunic inside. The Arabs mostly have small turbans, but with the Kabyles the hair is bound by a rope fillet which encircles the head. Both races generally have rope sandals on the feet.

OLD ARAB MENDICANT.

The Negroes are numerous, and very characteristic of an African land. They are of all ages, from frisky, merry little children to decrepit old men, whose skins become powdery, of a greyish white, with age. They are the labourers of the town, the carriers of burdens, the working pariahs. Most of them come from far-off Timbuctoo, from the southern regions of the desert of Sahara. They have crossed its sandy plains by a four or five months' journey, in order to reach Algeria, and will probably never

see their native country again. Some have been born in the country, and know no other, they are true Algerines.

The Jews are also numerous at Algiers. They are said to be principally descended from the Jews of Spain, who when expelled in the sixteenth century took refuge in the Moorish or Barberesque states of Northern Africa. During the dominion of the Turks, although they were constantly persecuted and ill used, their industry and talent for busi-

OLD NEGRO MUSICIANS.

ness enabled them to make themselves indispensable and to hold their own. Since the occupation of the French, thanks to the complete equality and freedom which the French laws accord, they have greatly increased in prosperity, and are said now to own the greater part of the real property of Algiers, and of the Algerine towns. They are the tradespeople, the men of business, the financiers of

the towns, and with their semi-Turkish garb, and their strongly-marked Jewish features, form a striking element in the population.

The Arabs are a dark-skinned, dark-haired, dark-eyed race. They are numerous, and represent the town descendants of the Arabian conquerors of former days. The nomadic Arabs who inhabit the plains and some of the mountains of Algeria, and the Arab tribes of the desert of Sahara, merely come to Algiers for business or pleasure.

ARAB GIRL.

Some of the best native families in the city are of this descent. The Arab sheiks, chiefs of tribes, are often very fine men with a commanding presence, and some of their women are said to be very beautiful. The Arab girl, whose portrait is reproduced, may be considered typical. She clearly belongs to the higher class of Arab society.

The Arabs dress in the bournous, but the better classes have handsome tunics underneath, with stockings and ornamental sandals or shoes.

The Kabyles are the inhabitants of the Jurjura mountains or Eastern Atlas, seen from Algiers. They are hardy mountaineers, fond of fighting, and had maintained their independence throughout the various occupations of Algeria by successive races. They have only recently been subdued by the French, and are merely retained in subjection by force of arms. They are a hard-working, as well as a hard-fighting race, and many of them now come to Algiers to work and gain money as labourers, or in any capacity. Some are dark-skinned, whilst others are quite fair. They are evidently a mixed race descended from waves of human beings driven from the plains to the mountains by each successive invasion of the northern shores of Africa by Romans, Vandals, Arabs, and Turks. Their withdrawal to the fastnesses of Mount Atlas reproduces in Africa the history of the Celts in Europe, that of the Corsicans in Corsica. Like all these mountain races the Kabyles have preserved a spirit of all but indomitable independence, and they resisted the authority of the French in the defence of their much-valued liberty until within the last few years.

Formerly, when Algiers was a nest of pirates, the Turks formed no doubt the prominent feature, for they were the dominant race. But they have all departed, and their city "knows them no more." They could not brook the presence of the abhorred Giaours where they had been lords and masters; so they abandoned Algiers and settled in Tunis, Syria, and Constantinople, far from the scene of their own and their fathers' misdeeds.

In the French part of Algiers these various races of mankind are mingled in picturesque confusion with Europeans—French, Spaniards, Maltese. But once the modern part of the town is abandoned, and the steep narrow streets of old Algiers are entered, the native races reign supreme, and are alone met. These streets are very singular, only from six to ten feet wide; they just allow room for a loaded donkey or mule to pass a pedestrian, and no more. The houses have no windows, merely a blank

wall to the street, unless there be an open shop, without windows, at the basement. Each house has a small closed door, which leads into a passage or room abutting on a square central courtyard or garden. All the windows in the house look on this central court, there are none in the outer walls, so that the sun never impinges on a window. These houses are only two stories high, with flat

STREET AT ALGIERS.

roofs, and in summer an awning is spread over the central court from the roof; thus there is shade and freshness everywhere. This, the oriental style of house, is adopted all over southern Spain—at Cordova, Valencia, Seville, and is much more adapted to a burning southern summer than the Parisian houses of many stories, all window, often directed full south, which the French are building all over

Algeria. There are often beams projecting above head from house to house in these narrow streets, and wooden buttresses from one storey to another, or from the street to the side of the houses, propping them up, owing, no doubt, to the walls giving way from old age. Sometimes the houses communicate overhead, and the street passes under them, under a kind of arcade (see woodcut).

In the open shops on each side sit Arab, Jewish, or Negro tradesmen or merchants, cross-legged, smoking their pipes and waiting for customers. In these various

JEW COFFEE-SELLER.

shops is sold every conceivable kind of merchandize, the higher grade shops being kept by the Arabs and Jews, the lower, for eatables especially, by most fantastic negroes, men and women, young or old. A prominent feature in these old Moorish streets or lanes is the coffee-house or "café Maure." Mussulmans not being allowed by their religion to take spirituous drinks, seem to satisfy the

craving for nerve stimulants which characterizes civilized humanity by constantly imbibing coffee. These coffee shops are found every few doors, and address themselves to every variety of customer. Thus there are cafés for the Arabs, the Kabyles, the Jews, the Negroes, indeed for every nationality and for every grade of customers. The café is a mere room, entered from the street by a wide open door or portal. Around the inside is a low divan, on which the coffee takers sit, generally cross-legged, drinking their coffee and smoking either tobacco or the "haisch," a compound of Indian hemp and other substances, which is intended to plunge them into delicious dreams. At the extremity of the room or shop is the charcoal furnace on which the coffee is made. The latter is generally served with the dregs in tiny cups, holding about a wineglassful, for which one sou is charged. I several times partook of this coffee, but am not prepared to pass any great encomium upon it, rather the reverse.

The "café Maure" is evidently a lounge, a club, a place of reunion for the natives. In the evening these coffee-houses are always crammed, and I frequently heard monotonous chants proceeding from them. One evening our guide, Mahmoud, a most obliging man, took us to a Kabyle "café" renowned for its cultivation of the muses, and especially of Terpsichore. The café was so full of Kabyles that we had some trouble to obtain seats, and the only space left was a passage about five feet wide between the divans. The musicians were two in number, one played on a tambourine, the other a species of flageolet, the music being a monotonous and not unharmonious drone. The dancers were volunteers from the audience—firstly, a young man of twenty, then an elderly man of fifty. Both danced in the same singular way, not so much by moving their feet, as by attitudinizing, bending the body first one way then the other, and making all kinds of contortions with a handkerchief held in both hands, at one time suspended over their heads, at another brought more or less rapidly over their shoulders, their arms, their bust. The feet shuffled gently at the same time in measure to the music, but so slowly that it

took ten minutes to get over ten yards of space. Sometimes they assumed a semi-kneeling position. The attempt to assume graceful attitudes and to bend the body into all kinds of elegant postures on the part of labourers and draymen was supremely grotesque. Yet it was an emblem of eastern life and eastern ways, for such I am told is dancing in the east. The accompanying woodcut of an Arab dancing girl is evidently the model my Kabyle dancers had in view. The performance over, we applauded vehemently, shook hands with the performers, and drank

DANCING GIRL.

our coffee. After fraternizing for an hour with the Kabyles, who were the very pink of politeness, we took leave of them. A little further we stopped at an Arab café where vocalization was the order of the day. Here, also, the Arabs were sitting cross-legged on a low divan, round a large room or shop opening on to the street, smoking and

drinking coffee. Both the music and the songs consisted of a monotonous chant, in which the voice rose and fell a few notes only. The sounds were not devoid of melody, and it is easy to comprehend that such a chant, with words that interest the hearers, sung under the tent in the desert by a youthful and fresh voice, would command a sympathetic and attentive audience.

The Arab school for boys struck my fancy greatly. I went into several, and was greatly pleased to see the master, generally an old man with a white beard, sitting cross-legged, and surrounded by a swarm of pretty little black-eyed boys in eastern dress. They also sat cross-legged, with slates in their hands covered with Arabic characters, repeating with shrill voices the verses from the Koran which they were being taught. We were not admitted into the girls' schools, but I saw a very interesting assemblage of little Arab girls from six to twelve years of age in the embroidery workshop of Madame Luce, a French lady. Partly from philanthropic motives she teaches young Jewish and Arab girls the art of embroidery, and under her auspices they become apt scholars, as was evident from the numerous and lovely embroidered objects of ladies' toilette that were shown us. Many of the little girls were perfect little houris.

To one fresh from Europe, who has never seen an eastern city, there is a great charm in wandering through the old streets of Algiers. We fancy we are in the Bagdad or the Damascus of our youth, amidst the scenes of the Arabian Nights Entertainments which afforded us, once upon a time, such intense enjoyment. All the pageantry of the eastern tales rises up before us. The veiled women are the sultan's daughters, the old men in flowing robes are viziers or magicians, the young men in Arab costume are the king's sons in disguise!

On every side are evidences of a strange southern land. One day I was riveted for an hour by the tricks of a Negro conjuror, exhibiting in an open space, and surrounded by a crowd of laughing, grinning, applauding Arabs, Kabyles, Negroes, the first row squatting on the ground, the second standing. He was a coal-black, tall,

lithe, supple young fellow of three or four-and-twenty, naked to the waist, with tight-fitting drawers only reaching halfway down the thighs. Round his neck he wore a live snake some three feet long (a coluber), with which he appeared to be on the most affectionate terms; it was his principal plaything. He constantly had it in his hands, sometimes twining it round his waist, arms, or neck, and sometimes holding it by the tail and extending it full length towards the crowd as he ambled round his circle, thereby increasing its area, as all drew back in dismay. He talked incessantly, laughing, like his audience, at his own conceits, and was ever on the move. His motions were so rapid and so graceful withal, that he seemed more like a wild animal than a man. He did many wonderful things much to our delight, such as breaking huge flat stones, previously examined by us and found without flaw, by side blows of the hand. This feat he attributed clearly not to strength or knack, but to a series of most grotesque incantations delivered before the blows were struck.

One evening we went to witness the rites of a sect of Arab "dervishes," who pretend that they can, as holy men, eat and drink anything however noxious to human life with impunity. The origin of the sect is said to be as follows:—On one occasion, Mahomed, pursued by his enemies, was reduced to the last extremity, and his followers complained to him that they had nothing to eat. On this he reproached them for their want of faith, and told them that if they believed they would find that they could eat anything, stones, glass, scorpions, and derive nourishment therefrom. They tried the experiment and found the prophet's words true, so they founded a sect to the members of which this miraculous power has ever since descended, and which still flourishes.

We were shown into an Arab house in one of the back streets, the internal courtyard of which had been built over so as to constitute a large room, with wide arcades on the four sides, both on the ground and on the first floor. The central area was covered with carpets, and on one side was a slightly raised divan, on which four Arab

Dervishes were seated cross-legged. There were many other Arabs, some forty or fifty, in other parts of the room, mostly sitting cross-legged. At a given time one of those on the divan, who seemed the chief, took up a tambourine, which he struck gently. The other three did the same, and then they all began a monotonous chant in three notes, keeping time with the tambourines. Every few minutes the tambourines were given to an attendant to warm over a charcoal fire. Gradually they increased the rapidity of the chant and music, when an old man advancing from the crowd, and kneeling down before the divan, began to chant in unison, rocking backwards and forwards. One by one several others came forward, knelt down and joined in, rocking themselves to and fro in front of the divan, and chanting like the rest.

By degrees they became more excited, their movements assumed a more rapid character, and their features a wilder and wilder expression. Then began the performance. A red-hot poker was brought, and the old man licked it round and round, over and over again, as if it had been sugar-candy. A flat spade of iron red-hot was now produced, and he repeatedly stamped upon it with naked feet, and drew it over the palms of his hands, without apparent suffering. This man then knelt and resumed his rapid backward and forward movement, roaring aloud to the monotonous music until he fell into epileptiform convulsions and was carried away. His neighbour next presented himself, and thin pointed skewers were run through both cheeks horizontally, and others vertically, so as to sew up his mouth. Blood and saliva poured down his cheeks whilst he recommenced his swaying motions in front of the divan, the rest of his companions, uttering short, loud grunts or groans each second or two. A third devotee was given large pieces of glass, which he crushed audibly in his mouth with his teeth, apparently swallowing the pieces. Then there was a general distribution of the thick fleshy leaves of the Prickly-pear, covered with hard spines half an inch long. They all threw themselves on this delicate food like wild beasts, biting large pieces off the leaves, thorns and all,

and crunching them with apparent delight. We were told that the best of the exhibition had to come, that they would swallow live scorpions, and do other wonderful feats, showing that they were not like other men, and could do with impunity what would destroy any one else. This our Arab interpreter Mahmoud appeared firmly to believe. But I and my friends were tired and disgusted with these howling maniacs, and departed. There must be some trick in this performance, although I failed to discover it.

There are many objects of interest to the stranger at Algiers which I have not space even to enumerate. I would make an exception in favour of the Mosques, large naked edifices with semicircular or Saracenic arches, the floors covered with Turkey carpets or mats, for the barefooted worshippers. The Museum is also well worth a careful visit; it contains many interesting Carthaginian and Roman antiquities, the latter showing what a high degree of civilization and what great importance the Roman colonies and towns had attained during the Roman occupation of Algeria. In all they do at present, both in a military and social point of view, the French seem to be merely following in the steps of their Roman predecessors. As they advance south they are occupying the same military posts, colonizing the same towns, and finding that whatever they have to do has been done before them, nearly two thousand years ago, by the conquerors of the ancient world. What this wonderful people did in Gaul and in Britain they were doing at the same time in north-western Africa and in a score of other regions.

No one should leave the Museum without casting a glance at a ghastly vestige of the cruelty of the Algerine pirates in former days. There was a tradition connected with one of the Algerine fortresses that above two hundred years ago a Moorish convert to Christianity, who would not abjure his new religion, was buried and built up alive in one of the walls of the fortress. The French had to demolish this fortress, and truly, in the very depth of one of the walls, was found the body of the poor victim. A cast was taken, and now more than two centuries afterwards it presents as vivid and terrible an embodiment of his torture

and death as does the cast at Pompeii of the death of the family overtaken by the ashes of Vesuvius eighteen centuries ago. His hands and feet were bound with cords, and he was evidently thrown horizontally into the wet mortar. His mouth is pursed up to prevent its entering, and gives the impression of horror and agony.

Algiers and its strange life and scenes surveyed and analysed, my thoughts turned to the principal object of my visit, the study of climate, revealed by vegetation. As the best way of judging what the Algerine climate really is, I devoted a couple of days to the examination of the Jardin d'Essai or Experimental Garden, of which I had heard much.

This garden was commenced some twenty years ago by Government as a botanical and experimental garden. It is situated about two miles from Algiers, in the centre of the bay, beyond Mustapha Inferior. It occupies the level ground at the foot of the Sahel hill, extending to the sea-shore, and ascending the Sahel itself for a short distance. Within the last few years, it has been sold to a company which is doing much for Algeria, the Compagnie Thalabot. All the plans of the Government are being continued on the system of a vast nursery or horticultural establishment, meant to pay its expenses by the sale of plants and trees. The soil is a mixture of calcareous loam with micaceous and siliceous sand. The most remarkable feature in the garden is a splendid avenue of Chamærops humilis, Latania Borbonica, and Dracæna Draco, alternating on each side for a distance of nearly half a mile. The Chamærops are at least ten or twelve feet high, the Latanias and Dracænas higher still, quite trees. The effect of this wide tropical avenue of Palms is perfectly magical. They are in splendid health and beauty, although many of the leaves had been damaged by the severe weather of March. It would appear that the weather was as bad in the year 1869 during March in Northern Africa as in Southern Europe—constant winds from the north, with hail, and a low temperature predominating. The Palms, I was told, had suffered unusually, but were only damaged in foliage, not in structure. There is also a fine avenue,

and a small thicket of noble specimens, of the Phœnix dactylifera.

One large border devoted to hardy Palms, capable of growing with perfect health in the climate of Algeria, filled me with admiration. There I saw growing freely, luxuriantly, to the height of from ten to twenty or thirty feet, in the full perfection of health, many Palms that I had never seen before out of Palm-houses, always excepting those I mentioned in a former chapter, as grown in the open air on the Riviera. Thus I noted the Phœnix pumila, reclinata, spinosa, leonensis; Sabal Adansoni; Chamærops humilis, Martiana, tomentosa, palmetto, excelsa, elegans, hystrix, Birrhus; Copernicia cerifera; Corypha australis; Latania Borbonica (immense); Brahea conduplicata; Thrinax speciosa, radicata, argentea; Rhaphis flabelliformis; Ceroxylum niveum; Chamædorea speciosa, lepidota, scandens, elegans; Oreodoxa regia; Cocos Datil, speciosa, botryophora, lapidea, australis, coronata; Jubæa spectabilis; Attalea speciosa; Caryota Cumingii, furfuracea, urens; Arenga saccharifera; and several others, the names of which I did not note.

There were also beautiful beds of Cycadeaceæ, Bonaparteæ or Dasyliriæ, Dracænas, and Yuccas. Among others plants I noticed Dion edule, Encephalartos horridus, Caffra Lehmanni, longifolius; Cycas Rumphii, circinatis, revoluta—all large plants, two or three feet high, Zamia fusca, latifolia; Musa Ensete, Strelitzia ovata; Dracæna indivisa, Draco, umbraculifera; Cordyline congesta, Brasiliensis, cannæfolia; Yucca aloifolia, gloriosa, Draconis, filifera, angustifolia, Parmentieri, canaliculata. All these trees and plants were remarkable for the perfection of their development, making due allowance for the winds and cold of March, which, as stated, had damaged the leaves in some cases. The Cocos botryophora, the Cocos speciosa, and the Oreodoxa regia were above thirty feet in height, although young trees—the siliceous soil evidently suiting them. The Sabal Adansoni were very fine plants, one mass of leaves, but these leaves were so torn by the wind that they had lost all claim to beauty. Even the Latania Borbonica, magnificent as it was as a tree fifteen feet high,

is not so handsome as when well grown in a stove, with plenty of room to develop each leaf.

The first impression produced by the sight of these beautiful Palms, Cycadeaceæ, Zamiæ, and Bonaparteæ, was that I had landed in a truly tropical country, and I cast my eyes around to see if it was not really so. To my surprise I found on all sides the evidence of a "real winter," of a winter apparently as severe as the one we experience on the north shores of the Mediterranean, in a latitude 5° more north, but protected from north winds by the Maritime Alps. The deciduous trees, Mulberry, Fig, Plane, Pomegranate, Willow, were only just beginning to show signs of life (April 18). The Vines were throwing forth their first leaves, the flowers were not yet developed. There were but few Roses out, and those principally the hardy Bengal Rose. Spring bulbs were going or gone out of flower, but the Ranunculus, the Sparaxis, and Ixia were in full and profuse bloom. I had seen orchards of the edible Banana on my way from Algiers, evidently cultivated for the fruit, but they were mere leafless stems one or two years old, torn and battered by the winter, and just showing at their extremities the first new leaf. On the other hand, there were scarcely any Orange trees or Lemon trees, either in the Jardin d'Essai or in the gardens of the country houses at Mustapha Superior, the hilly health suburb of Algiers where are situated most of the country houses of the rich Algerines, and the favourite villas for invalids.

In a word, there was conclusive evidence that vegetation suffers more from the influence of winter at Algiers than on the Genoese undercliff, and that spring was not then more advanced. The only deduction I could make was that the plants enumerated were hardy enough to pass through nearly the same amount of winter cold as experienced on the protected Riviera, 5° more north, but that the greater heat of the summer in Algiers secures to them a more luxuriant, more exuberant life and growth. This is more especially shown by the Banana, which grows anywhere on the Riviera, but only gives ripe fruit in very exceptionally

warm corners, such as the bays between Mentone and Monaco; whereas it is evidently cultivated extensively in the vicinity of Algiers for the sale of its fruit, and that in situations fully exposed to the north winds.

These facts are easily understood when we consider the position of Algiers. Being exposed due north and north-east on the south shore of the Mediterranean, on the slopes of a crescented hill from 300 to 600 feet high (the Sahel), the north-west and north-east winds, which reign during the winter, arrive cool and loaded with moisture. They thus bring moderate cold and a damp atmosphere, the moisture of which often falls as cool rain, condensed by the hills and mountains behind Algiers. The town being north-east and north, the sun in winter, when low in the horizon, cannot shine with the same power as on the north shore of the Mediterranean, where its rays impinge directly, all day, on the undercliff. On the 20th of April, even at twelve o'clock, the fronts of the houses at Mustapha Superior were in the shade; being situated on the north slope of a hill looking towards the beautiful bay, they are naturally built to face the sea. Moreover, as the north winds are necessarily moist from having crossed over the entire width of the Mediterranean, or from having come from the Atlantic, the sky is whitish owing to watery vapour in the atmosphere; it is not dry and blue as on the north Mediterranean shore—a condition which still more diminishes the power of the sun's rays.

After visiting the Jardin d'Essai, on one occasion, I drove a mile or two further on, ascended a favourite ravine or valley called the "Vallon Frais," passed along the summit of the Sahel, but on a road below its level, and returned by Mustapha Superior. Wherever we found protection from the north sea winds, in hollows and valleys, vegetation at once assumed great luxuriance. Fig, Olive, and Orange trees appeared, large in size and healthy in development, but disappeared as soon as the protection ceased.

It is certain that there is nothing like the luxuriance of winter vegetation at Algiers that is observed betw en

Nice and San Remo. The Orange and Lemon trees cannot stand north sea winds even in latitude 36°, although they can bear south sea winds in latitude 43°; so they are absent, except in sheltered nooks and corners, where they grow well enough. Even the Olive tree does not seem to flourish when freely exposed to these north winds at Algiers; it has to seek sheltered valleys and nooks where the wind does not reach it. There is nothing like the Olive groves of Mentone to be seen at or near Algiers. Nor is it surprising, when we consider that these same north winds, loaded with moisture, bring cold rain, hoar frost, and snow to the mountain regions of the Atlas, 120 miles further south, and even to the oases of the Great Desert of Sahara, a hundred miles more to the south than the last Atlas ridges. (See *The Great Desert.* Tristram.) In the contest between "latitude" and "protection," it is clear that thorough protection from the north can hold its own against many degrees of latitude.

I do not for one moment pretend to say that the winter climate of Algiers is a cold one—the thermometer is there to prove that it is not; but the spring vegetation also proves that there is a great deal of cool winter weather and cool rain, owing to exposure to the north without any protection whatever. These cool winds and rains, notwithstanding lower latitude and greater summer heat, evidently unfit Algiers proper, that is, the town and vicinity of Algiers and the coast line, for the free cultivation of delicate plants, such as the Lemon, which require sunshine, heat, and immunity from north winds winter and summer; whereas these same plants thrive perfectly in a more northern but at the same time a more protected region.

The high medium temperature of Algiers during the winter months, as given by observers, is owing, in a great measure, to the nights being warmer than they are on the sheltered north Mediterranean shores, such as the Genoese Riviera, where the air at night is cooled by down-draughts from the mountains that protect it from the north, the Maritime Alps.

Having thus examined the eastern suburbs of Algiers, I was desirous to see the region lying due west, so we ar-

ranged an excursion to a Trappist monastery, situated on the coast about fifteen miles west of the city.

Leaving the port and town behind, we passed through the western suburb of Algiers, called Ste. Eugenie, where there are some country villas, situated between the base of the Sahel and the sea. They are decidedly objectionable, being at the extremity of the western promontory that contributes to form the bay of Algiers, and exposed, consequently, both to the north-west and north-east winds. The road skirts Cape Pescale, which terminates the promontory, and then turns in a south-westerly direction, still following the shore at the foot of the Sahel. A little further on the Sahel hill leaves the coast, or rather follows it a few miles inland. It sends, however, buttresses, ribs as it were, into the sea, which give a very jagged, irregular character to the shore, forming sheltered coves and bays, celebrated in former times as the retreat of the Algerine pirate vessels. It is here that they used to lie, ready at any moment to avail themselves of favourable winds to go to sea, and pounce on their prey. The road all but skirts the coast, passing through a plain only partially cultivated, and still covered in a great measure with the Chamærops Palm, Cistus, and wild flowers and grasses. Here and there we came upon patches of cultivation, corn farms, Geranium farms for scent, and pastures, which, by their luxuriant crops, showed the soil to be a very fertile one.

Fifteen miles from Algiers we reached a castle surmounted promontory, Sidi Ferruch, forming a bay sheltered from the south-west, where the French army landed on the 14th of June, 1830. On the 19th of the same month was fought the battle of Staouèli, so called from an elevated plain of that name, four miles inland from the point of disembarkation, on which it took place. In this battle the Turks were totally routed, and their defeat led shortly afterwards to the surrender of Algiers by the Dey. Thirteen years later, in 1843, this plain, extending over 2200 acres of land, was given over by the French Government to the monastic order of the Trappists, who at once commenced the foundation of their present establishment.

After twenty-seven years' struggle with nature, they have transformed the wild Palm-covered plain of Staouèli into a garden of Eden.

Ladies are not admitted within the monastery, so those who accompanied us had to remain in the Porter's lodge, much to their chagrin. We passed through a wide portal surmounted by the following inscription :—

"If life is sad at La Trappe, death is holy and sweet."

And then entered a large courtyard, in the centre of which grows a group of magnificent Date Palms, the trunks of which are so close that they appear to come from the same root. The tents of the Dey of Algiers and of the Beys of Constantine and Oran, were raised under their shade before the battle of Staouèli. Round this courtyard, and round a further one, are good substantial buildings, in which live the monks, 120 in number. These buildings are only remarkable by their naked simplicity; with the Trappists, everything, clothes, furniture, food, is reduced to the simplest expression compatible with life. I was much struck by the dormitory, a large room, in the centre of which, in a double row, are small numbered cabins, six feet long and five wide, quite open at the top, half open at the side, with little iron beds, one thin mattress, and a blanket. Here they all sleep, are ill and die. Two bedsteads were turned up, and we were told their occupants had died the day before. On entering, the monks lose their names, and assume conventual names, Father Thomas, Father Philippe. When a monk dies, it is merely Father Joseph who dies. Silence is the rule of the order, the only one who is allowed to speak being the one who is told out for the day to take strangers over the premises.

The monks are divided into two sections, the spiritual fathers and the working fathers. The former, dressed in white, never work, but perform masses in the chapel day and night, one service beginning as the other ends, in order, as I was told, "that the praise of the Lord may be sung without ceasing." The working fathers are dressed in brown woollen gowns, with a rope cord at the waist,

and work on the farm from morn to eve. I never saw more splendid animals, cows, oxen, mules, horses, goats, sheep, and pigs, than those reared on the farm. The farm buildings were perfect, and the fields in a splendid state of cultivation, growing Vines, fruit, Mulberry trees, cereals, and grasses, in abundance. We were told that the farming profits were very considerable, and were all consumed in charity, principally in giving food and drink to those who applied at the gate. The monks themselves only lived on bread and vegetables, drinking water. Thus they starved in the midst of plenty. The father who gave me these details said that all postulants who presented themselves were admitted if there was a vacancy, which there generally was, and no questions were asked. If their courage failed them they were free to depart when they liked. But a small proportion of those who entered yearly remained, for, said he, they wanted faith, and mistook temporary feelings, grief, despair, disgust of the world, for a real religious vocation founded on "faith." So they soon lost courage, and the emotions that drove them into retreat calming down, they slided back into the world. Had monastic institutions always been founded and directed on these principles, had they merely inculcated self-denial and meditation, enforced labour and religious discipline, and left those who joined them free to go or to come, they would not have fallen into such general disapprobation.

We were shown the cemetery, a mere ordinary burying-place with mounds and crosses only, to show where the dead lie. The Trappists do not spend their time in digging and filling up their own graves as reported. When a brother dies his grave is dug and he is buried, that is all. The organization of this monastic order as thus explained is admirable. It affords a field for the two different types of the human mind which are everywhere to be found. The spiritualists, the followers of Plato, would naturally become spiritual fathers and pass their time in ecstatic contemplation and meditation and in religious observances, whereas the positivists, the followers of Aristotle, would as naturally take to the farm. As to

myself, were I to become a Trappist, I should at once apply for the post of "gardener." It is scarcely necessary to add that the portrait given in the woodcut is that of a "spiritualist" father. He had been a Zouave soldier, took refuge from the world at Staouèli, and died there.

This visit to the Trappist monastery vividly recalled ideas which had occupied my thoughts ever since landing, and which every day's residence in Algeria has tended to strengthen. The settlement of the French in Algeria, although undertaken and continued for political purposes

THE TRAPPIST ZOUAVE.

only, has in reality a decided missionary character. It is the first grand inroad made on the head-quarters of Mahomedan infidelity since the time of the Crusades. Nearly all the north-west coast of Africa, down to the Great Desert, has been occupied by the French nation, never to be given up again, and along with their sway, Christianity

and Christian ideas of right and wrong have established themselves over this, the most fertile region of North Africa, the great stronghold of Mahomedanism in the Middle Ages. It was from this part of Africa that the Mahomedan Arabs passed over to Europe, to overrun nearly all its southern regions. Christian Europe, eleven centuries ago, in the days of Charles Martel (battle of Tours, 732), pushed back into Africa the threatening wave of Mahomedanism, and now, after this long lapse of time, Christian Europe has permanently occupied the very country from whence the fierce Mahomedan of the early Middle Ages came. Singular it is that it should have been left to the nineteenth century to destroy this nest of Mahomedan pirates, that all the great kings and emperors of modern history should have allowed them to reign over and ravage the Mediterranean seas. It is not much more than forty years since France took upon herself the glorious task of chastising and expelling the infidel pirates from their blood-stained home.

I inquired of the father who took us round how it was that so little had been accomplished in the cultivation of the land between their establishment and Algiers, for we had seen nothing like the luxuriance of the Trappist farm. His answer was that it was not so much from superior fertility of soil as from the constant indefatigable labour and intelligent management of the monks. The latter, however, I subsequently learnt were at first considerably assisted by convict labour granted by the authorities. The French Government has made the most energetic and liberal efforts to colonize the fertile lands of Algeria, giving land, seed, tools without stint, but hitherto with very partial success. The colonists are very often men who have not succeeded in their own country for want of the very qualities necessary to make them succeed in another; they drink, or neglect their farms, or mismanage them. If a year of prosperity comes they spend the money, and then in the year of bad crops are obliged to borrow at ruinous interest, get involved, and have to sell at any sacrifice. Moreover, they often lose their health, even if in a healthy district, from bad and insufficient food, from bad water, and from

living in the period of first settlement months in tents under an African sun. After years of struggle, broken in constitution, over-burdened with debt, they die or make way for men with a little capital, who buy them out and profit by their labours, improvidences, and misfortunes. The second generation thus begins under better auspices, has good food, which the soil now produces, and lives in well-built houses, which shelter them from the heat in summer and the rain in winter, so they flourish and thrive where their predecessors sickened and died. Such is the tale I heard everywhere all over Algeria.

On the return journey we took another road at a higher level, on the Sahel, passed through several flourishing villages and well-managed farms, and descended on Algiers by the heights of Bouzaréah. The view from these heights is very fine, and the valley down which the road descends to Algiers is very fresh and green. There is, however, nothing in its beauty to warrant the poetical raptures into which most tourists in Algeria break forth in describing the Bouzaréah hills and ravines, unless it be the numerous dwarf Palms, Aloes, and Opuntias. Yet they are not so very beautiful when seen dust-covered on the roadside, and they are met everywhere about Algiers. On an unaccustomed eye, however, they may, and probably do produce a deep impression.

Algiers and its vicinity analysed, and time pressing, I and my travelling companions, a distinguished and brilliantly intellectual American gentleman, member of Congress for New York, and his accomplished lady, commenced preparations for the second stage of our travels: the expedition to Fort Napoleon, in the "Grande Kabyliè," at the foot of the Jurjura Mountains. There are diligences all over Algeria, but not wishing to travel at night, and being tied by time, I applied to the head of the administration of the mails and diligences for a good carriage, with relays of horses at proper places. The plan of our journey was laid before the authorities, and the necessary measures were so judiciously taken from head-quarters that the entire route was performed easily, comfortably, without the slightest

hitch or trouble. The cost was, we considered, reasonable, although above ordinary posting rates.

PHYSICAL GEOGRAPHY AND GEOLOGY OF ALGERIA—"LA GRANDE KABYLIE"—FORT NAPOLEON.

Before beginning the narration of my travels in the interior of Algeria I must say a few words on the topography, history, ethnology, and geology of the country and of its inhabitants, in order to facilitate the comprehension of what I saw. But I shall be very brief.

Algeria is a mere African Switzerland, as will be perceived on referring to the map at the commencement of this chapter. I have drawn it up more especially to show the physical geography of the country, the mountains, the valleys, the rivers, and the Desert. It is founded on a very good skeleton map in Dr. Armand's work, entitled "Médecine et Hygiène des Pays Chauds." Algeria is constituted by a mass of mountains on the north coast of the African continent, extending from Morocco westward to the Pachalic of Tunis eastward, that is, from longitude 8 West to 10 East, or 18 degrees, equivalent to 1200 miles from east to west. The Atlas are lost to the east in lower hills scarcely deserving the name of mountains, which form the background of the Pachalic of Tripoli between the sea and the Desert. Algeria is comprised between the 37th and the 33rd degrees of latitude, and extends about 200 miles from the Mediterranean to the oases of the Desert, where mountains and raised plains disappear, and where the level is often only a few feet above the ocean. Mount Atlas, which constitutes this Alpine country, instead of being formed by one range, as is generally supposed, is formed by three ranges, rather blended in the province of Constantine, but quite distinct in those of Algiers and Oran, with intervening valleys. These ranges are :—

1st. The Little Atlas, which, beginning with the Jurjura Mountains, seen from Algiers on the eastern horizon about sixty miles distant, runs parallel to the coast, at a distance inland of from one to ten or fifteen miles, nearly as far as Mostaganem. Between this range and the Sahel hills, on

the north side of which the city of Algiers is built, lies the well-known plain of the Mitidjah.

2nd. The Middle Atlas, which commences at Bougie, 120 miles east of Algiers, and extends westward into Morocco; it also lies parallel to the coast, at a distance of from forty to sixty miles from the sea. Between these two ranges lies a fertile alluvial valley, from ten to thirty miles broad, called the valley of the Cheliff, from the river of that name, which runs through it. This, the largest river in North Africa, after the Nile, takes its rise on the north slopes of the "Great Atlas," the third and most southern range, crosses the elevated plains which lie between the two inner ranges, also the Middle Atlas, and runs into the sea at Mostaganem. The alluvial soil in the Cheliff valley, in the space comprised between the Little and the Middle Atlas chains, along with the Mitidjah plain, constitute more especially the cultivable part of Algeria. It is often called "the Tell," from the Latin word "Tellus," earth.

3rd. The Great Atlas is a mountain range which extends from Tunisia to Morocco, from forty to sixty miles south of the Middle Atlas. The region contained between the two latter chains is called the Algerine Desert, the Desert of Angad, or the region of the High Plains (Hauts Plateaux). The latter appellation is derived from the fact that the greater part, especially to the east, is occupied by plains several thousand feet above the level of the sea. The streams or torrents which carry the watershed from the southern slopes of the Middle Atlas and from the northern slopes of the Great Atlas, run into these plains, and generally finding no exit, form large "salt water" lakes and marshes in the centre called *chotts*, as rivers always do when they run into lakes without exit. The largest of these water-courses, the Cheliff, as already stated, finds its way to the sea. It takes its rise on the northern slopes of the Great Atlas, crosses the High Plains, or the Algerine Desert, and finds a cleft in the Middle Atlas by which it reaches the Tell, the alluvial valley that bears its name.

South of this, the third mountain chain of the Great Atlas, the Alpine region ceases, and the great Desert of Sahara, with its ocean of sand and its oases, really begins.

Biskra, one of the first oases met with, is only one hundred and sixty feet above the sea-level. The appellation Little and Great Atlas does not apply to altitude but rather to extent from east to west. Thus the Jurjura mountains, which attain an elevation of seven thousand feet, are the highest of all, and yet they are in the Little Atlas chain. I stood in the Cedar Forest above Teniet-el-Hâd, on a summit of the Middle Atlas 5600 feet high by the barometer, an altitude which I believe the Great Atlas further south does not attain.

These three mountain ranges are not mathematically uniform, but describe sinuosities north and south, throw out spurs and buttresses in every direction, divide into subordinate ranges, especially in Oran, and altogether make, as I have said, a very Switzerland of Algeria, subordinate however to the natural divisions which I have given, and which I have plainly delineated in the map. A knowledge of this, the physical geography of Algeria, throws a great light on its past history, on that of its inhabitants, and on its climate.

In describing Algiers I have given an idea of the principal race types that inhabit Algeria. I will now recapitulate them, making a few additional observations on their origin and history.

The northern part of Africa from the shores of the Atlantic to the Red Sea, and beyond, appears to have been inhabited, from the dawn of historical times, by two distinct families of the Aramæan branch of the white race, the Berbers (Kabyles and Touaregs) and the Arabs; and the two families still exist in these countries. The Berbers have ever been mountaineers, agriculturists attached to the soil they cultivate, living in stone-built cabins, owning flocks but not horses, for which they do not care, as not adapted to their mountain residence. The Arabs have ever been nomadic, living in tents, owning flocks which they drive from one region to another, from the plains to the lower mountains, and *vice versâ*. They attach great importance to the possession of horses, and despise towns, which they destroy and do not rebuild.

The Carthaginians, the Romans, the Vandals, succes-

sively occupied the shores of Algeria and the fertile plains of the Tell, driving the original Arabs into the Great Desert, and the Berbers or Kabyles into the higher mountains, where both retained their independence. When the religious and military migration of the Arabian Arabs took place, after the death of Mahomed, in the seventh century, the Arabs of the plains, reinforced by their eastern countrymen, occupied the entire country with the exception of the higher mountains, of which the Jurjura are the centre, where the Berbers or Kabyles successfully defended themselves. They, the Arabs, reigned supreme on the shore, in the plains, and on the lower mountain ranges, and were the conquering race until the Turks took possession of Algiers (1516), of Tunis, and of Oran, and made their authority felt and accepted by the formerly victorious Arabs as far south as the Great Desert. Their power was destroyed in 1830 by the downfall of the Dey of Algiers, and their dominion in the three provinces of Algeria has fallen into the hands of the French. The latter, after more than forty years' occupation of the country, have established their authority more firmly than any power since the days of the Romans. Thanks to thirty years' all but incessant fighting, they have subdued the hitherto independent Berber or Kabyle mountaineers, as well as the Arabs of the Tell and of the Desert, and they hold the entire region comprised in the map, including the first oases of the Great Desert, Biskra, Lagouat, Tuggurt.

The Tell Arabs, owing probably to their nomadic pastoral habits and to their flying before invasion, have retained pretty nearly the type of their original race, and resemble their Arabian or Sahara countrymen. But the town Arabs and Kabyles have in a great measure lost all distinctive features from causes that are easily understood. Each successive invasion of Algeria by strangers drove many of the previous inhabitants up into the mountains, where they amalgamated with the Kabyles, intermarrying with them. Thus the Berber race has been modified by intermixture with Carthaginians, Romans, Vandals, Arabs, and even Negroes; for in all times Negroes from the southern regions of Sahara, from the Soudan and Tim-

buctoo, have found their way to the north African coast. In the villages of Kabylia many kinds of race type are consequently seen, from the swarthy, olive-visaged, black-eyed Arab, to the fair-skinned, light-haired descendant of the Vandals. The race purity of the Algiers Arabs has been modified in the same way.

Previous to starting on the excursion to Kabylia and the Jurjura mountains I was anxious to make myself acquainted with the geology of Algeria, but singularly enough could find no work on the subject at Algiers. The various French Guidebooks do not even allude to the geology of the country, nor do they give any account of the nature of the rocks and soils in the different regions which they describe. I was told that the only work on the subject is a report of a Government commission, published in quarto, with a map issued by the School of Mines many years ago, but I could not get a copy. In the catalogues of books on Algeria, published by the booksellers in Algiers and Paris, there was no mention of even a pamphlet on Algerine geology, a very remarkable fact when we consider the bearing geological formations have on agriculture, and on the botanical aspects of a country. It would seem as if the study of, and the interest in, geology in France, even in its application to agriculture, were confined to the scientific men professionally connected with it. Neither could I find any information in any of the English works of travel in Algeria that I could obtain. I was thus reduced to my own observations. On my return through Paris I discovered, not without trouble, a book written by M. L. Ville, an engineer, entitled "Recherches sur les Roches, les Eaux, et les Gîtes mineraux des Provinces d'Oran et d'Alger," 1852, quarto. By means of this interesting work I have been able to test my personal experience, and I have been guided by it in drawing up the following geological statement.

The mountains and plains of Algeria are formed by igneous rocks, and by primary, secondary, and tertiary strata.

The igneous rocks are not greatly developed, and are only found as circumscribed islands in the midst of the

strata they have raised. Basalt, porphyry, and quartz are thus found here and there in the provinces of Constantine, Oran, and Algiers.

Primary strata or strata of transition, schisto-micacic and schisto-granitic, are also found, but do not occupy any great extent of the country. The hill of Bouzaréah, behind Algiers, belongs to this category, as do similar formations near Bone in the Province of Constantine.

The secondary strata constitute the great mass of the Atlas, and of the minor chains and ridges. They are principally composed of schistic clays, of hard quartz sandstones, and of grey limestones of compact crystalline texture. The summits of the mountains are generally formed of quartz sandstone, or of limestone, whilst the clays occupy their flanks. They are fertile and healthy.

These various strata have been violently disturbed. Their inclination varies from 45° to 90°. Their direction is 1° E., 18° S.; the direction that characterizes the upheaving of the Pyrenees, which took place between the deposit of the cretaceous and the lower tertiary formations: 2° E., 64° N.; the direction that characterizes the upheaving of the western Alps, which took place between the deposit of the middle and the upper tertiary periods: 3° E., 16° N.; the direction that characterizes the upheaving of the principal chain of the Alps, which took place after the deposit of the upper tertiaries.

This last is the most prevalent direction in Algeria, and has given to its surface the character represented in the map, that of long chains of mountains, directed from E. 16° N., to W. 16° S., leaving between them great longitudinal valleys, parallel to the direction of these chains, and generally filled by tertiary formations.

The various secondary formations of these provinces are so identical in their aspect and mineralogical composition, that it is natural to conclude that they belong to the same geological era. Fossils, at the same time, are so rare, that it is generally only by analogy and by mineralogical composition that their age can be determined. M. Renou, member of the "Scientific Commission," believes them all to belong to the cretaceous period.

The tertiary strata are numerous, and generally occupy the great longitudinal valleys which exist between the mountain chains constituted by secondary formations. These tertiary strata, says M. Ville, have often been carried to a great height by the geological convulsion which upraised them, as also the secondary strata which generally support them. Their characteristic feature is always to present great horizontal formations, which enables the observer to recognise them even at a distance. This horizontal character stands out in strong relief, with the abrupt precipitous elevations of the secondaries.

These tertiary formations constitute the Sahel, the plains of the Mitidjah, of the Cheliff, to within twelve miles W. of Milianah, the high table land between the Middle and Great Atlas, and also the sands and rocks of the Great Desert of Sahara.

They are formed of limestones, sands, sandstones, and clays. The tertiary rocks all contain these elements, but in different proportions; so that the physical character of the rock is determined by the proportion in which the elements are contained in it. The limestones seldom present great hardness or compactness, and always contain more or less quartz sand, which when it predominates transforms them into a quartz sandstone, combined by means of lime. When this lime disappears, dissolved by the action of rain, the sandstones become sands. This decomposition may be observed going on in our own time in many places.

There are also to be found, as around Mostaganem, great deposits of sand which have never been agglutinated into sandstone, and which the wind blows about, forming hills and ridges. The sands of the Great Desert of Sahara, no doubt tertiary according to M. Ville, have this double origin. They are formed of non-agglutinated original sands, and by sands let loose by the decay of limestone rocks containing them. The rocks which form the mountains and ridges that limit the Great Desert to the north, and constitute the most southern elevations of the Great Atlas, are secondary, and formed of quartz sandstone, of schistic clays, and of secondary (cretaceous) limestone.

Alluvial deposits are found in the valleys along the course of the various rivers. The larger valleys, such as those of the Cheliff and of the Chiffa, present these alluvial deposits in considerable depth and extent. Thus the Cheliff works its course at the bottom of a bed the sides of which are often thirty feet in depth, entirely alluvial.

On leaving Algiers, April 20, for Fort Napoleon, we passed due east through an area of partly reclaimed and cultivated land for some miles. The bearded Wheat crops were vigorous and healthy, above two feet high, and the ear fully formed; the artificial Grasses were equally luxuriant and healthy. Then we began to rise, and came to a region where cultivation was only partial, the ground being covered with natural Grasses and plants, mingled with Dwarf Palms, Chamærops humilis, and with patches of grain here and there, planted by the Arabs of the Mitidjah. Wherever the land was not under cultivation, the principal plants were the Palm and the Scilla maritima. The Chamærops had appeared by the roadside and between fields ever since we left Algiers, but here it occupied the ground in dense masses, along with its friend, the maritime Squill, called by the inhabitants the wild Ognon. Left to itself the Chamærops Palm grows in tufts, throwing out side shoots, and spreading in every direction. If these side shoots are cut off, the main stem rises to a height of from six to eight feet, but this it never does in a state of nature, always throwing out side shoots instead. This Palm covers the plain of the Mitidjah in most places, and extends high up into the mountains. Formerly it existed in the south of France, and it is still found wild in dense masses, in the south-east of Spain. It is the principal obstacle to the cultivation of the Mitidjah, as it can only be extirpated at an expense of 8*l.* an acre, so deep and matted are its roots. Although an obstacle to agriculture, it is a great ornament to the landscape. The bulb of the maritime Squill, the Squill of druggists, varies from the size of the fist to that of a child's head, and it is perhaps the commonest plant in Algeria. It extends all over the country, up the highest mountains, in the driest, sandiest,

hottest regions, and passing over the Atlas descends into the Desert itself, where it is nearly the last plant seen. This fact corresponds with my experience of it at Mentone, where it grows vigorously on the hottest, driest rocks. It seems equally at home in sandy mica-schistic or calcareous soil. It is not used, being considered poisonous by the inhabitants.

Rising gradually out of the plain we come to poor sandy soils, where I was reminded of the "maquis" of Corsica. Here were the Cistus or Rock Rose, the prickly Broom and the Cytisus, both in the full beauty of their yellow bloom; the Lentiscus, also in flower, the Cork Oak, the Ilex or evergreen Oak, but not the Mediterranean Heath, and rarely the Myrtle. Wherever sand, sandstone, or mica-schist appeared near the surface throughout my travels, this peculiar vegetation also appeared in full luxuriance, transforming the hill-sides, as in Corsica and Sardinia, into a very garden of yellow, white, and rose blossoms. This same "maquis," as we have seen, covers the Estrelle Mountains, near Cannes (mica-schist), and a small sandstone tertiary ridge in the Mentone amphitheatre (St^{a}. Lucia), as well as Corsica and Sardinia, and evidently connects in a most remarkable way the vegetation of the South of Europe, and of the entire Mediterranean basin, with that of the North of Africa. It is the peculiar vegetation of the entire Atlas range wherever the soil is formed by the break-up of primary rock; disappearing on calcareous formations. Its presence in wild luxuriance, and its general disappearance as soon as the nature of the soil becomes calcareous, although climate conditions are the same, is a remarkable illustration of the natural adaptability of plants to certain well-defined soils. Along with these plants also appeared in great profusion our garden flower, the Pheasant's Eye (Adonis) just coming into bloom. This plant is evidently a native, and, like the Silene pendula, then in full flower, is found everywhere in Algeria.

The "maquis," *broussaille* the French call it, gradually gave way to cultivation as we rose above the sea, penetrating into the lower mountain ranges. The Kabyles, who inhabit these mountains, are numerous, and are a laborious

agricultural race, tilling the ground with great skill and intelligence. They have only recently been subjugated by the French, and appear to have cultivated their country in this way from time immemorial. The mountain slopes and valleys, which constitute the Kabylia, are covered with much good and fertile soil; they are dotted with densely inhabited villages, and are a scene of universal luxuriance. Corn covers the slopes wherever the land admits of its being grown, and the Fig and Olive tree are seen everywhere. Sheltered from the north sea-breeze by the shore mountains or hills, both the Fig and Olive tree attain an enormous size, and are much finer than at Algiers. But the Olive is always seen on the south side of the hills, seldom or never on the north. The fruit of the Fig is one of the principal elements of food in the south, and, in a late famine, caused by a year's drought, and by a spring invasion of locusts from the Desert, it contributed to save the Kabyles. The first crop was destroyed by the locusts, but a second crop formed and was saved. Many Mountain Ashes are also seen, both in the Kabylia mountains and all over Algeria. This tree is evidently cultivated for its shade and its timber, but grows wild in the thickets. It seems very hardy, growing with as great luxuriance in the plains as at 5000 feet high on the sides of the Atlas, and does not appear particular as to soil. The Kabyles being good Mussulmans and not drinking wine, have not planted the Vine. It succeeds, however, very well in Algeria, and is planted wherever they go by the wine-drinking French. The Kabyle villages are generally surrounded with groves of the Opuntia, or Barbary Fig, which is found, except on the higher mountains, throughout Algeria.

The streams and rivers are fringed on both sides by the Oleander, or Rose Laurel, and by the Tamarisk. The Oleander forms dense bushes, which are very lovely when in flower. It lines, in more or less abundance, most of the mountain watercourses in the Atlas, becoming more and more luxuriant as we advance inland. The Tamarisk is its faithful companion, for they generally appear together; on the more inland streams the Tamarisk becomes quite a tree. These two plants are evidently

indigenous to the country, as is our old and irrepressible friend the Blackberry, which here as elsewhere delights in all soils, in all altitudes, luxuriates in the plains at the foot of Mount Atlas, in the valleys on his side, ascends to his summit, and probably descends into the desert. I often saw it climbing over the Lentiscus and other bushes, and even entwining its branches among the prickles of the Barbary Fig, which no other plant or climber seemed audacious enough to do. This was more especially the case at Tizi-ouzou, where we stopped to dine and sleep the first day. There was a perfect forest of Opuntias round the Kabyle part of the village or town. The Smilax, the Clematis, the Wild Vine, are common, as on the Riviera and in the Mediterranean islands generally. I repeatedly found the Hawthorn in wild mountain regions, where it could not have been planted, except by birds, in full bloom; birds scatter over large areas the seeds of the plants they feed on.

The ascent from the plains which occupy the eastern shore of the Bay of Algiers is very slight until the pass of the Beni-Aïcha is reached, thirty-two miles from Algiers. Here Kabylia begins, and the imposing mass of the Jurjura mountains meets the eye. Both the Romans and the Turks had a fortress in this position, as a defence against the inroads of the mountaineers. Two rivers, the Isser and the Djema, are crossed, as also the fertile but little cultivated plains through which they run, and the road gradually ascending reaches Tizi-ouzou, an important military station, sixty miles from Algiers. We arrived at six o'clock in the afternoon, having started at eight from Algiers, and having stopped an hour to lunch and to change horses at the Beni-Aïcha pass. We found a tidy little hotel with clean beds, and whilst dinner was getting ready sallied forth to make our observations.

Tizi-ouzou, like Beni-Aïcha, was a military post in the days both of the Romans and of the Turks. It was their advanced post in Kabylia, and the Turkish fort, that occupies the brow of the hill on which the village stands, was built on Roman ruins. The French army took possession of it in 1855, greatly strengthened it, and

founded a military village in 1858. The fort has now all the buildings required for a garrison of a thousand men, and additional outworks protect the village so as to secure it from a surprise. The non-military population comprises about two hundred European innkeepers, tradespeople, and colonists. In the immediate vicinity of the French settlement there is still a populous Kabyle village, which we examined with interest.

We were shown over it by a young Kabyle who volunteered his services, and found every one very civil and cordial, even the women showing but little shyness. They at first made a pretence of covering their faces with a corner of their wide sleeves, but soon gave it up laughingly, perhaps because we had ladies with us. Some of the younger women were really pretty, and looked quite graceful standing, reclining, or squatting at the entrance of their cabins. These cabins are built of stone and mortar, the better class roofed with tiles, the others thatched with canes. We went into several, and found them all erected on the same principle, the Eastern one, a courtyard inside, uncovered, into which opens the dwelling, and round which are outhouses and sheds, with no external windows or openings for ventilation. The interior was consequently very stuffy and close; although clean, they were too badly ventilated to be healthy dwellings.

The next day we started early, and in less than four hours reached the Fort Napoleon, passing through a rolling hilly district, the luxuriant vegetation of which I have already described, and within sight of many Kabyle villages. The Kabyles being sedentary and tied to the ground by ownership, every inch is cultivated, and scarcely a weed is to be seen. This fact explains the desperate energy with which they defended themselves in past and present times. They were fighting *pro aris et focis*, for their land, their homes, their wives, and their children; driven away, they had no resources. They had neither horses, nor camels, nor tents, nor had they the habits of nomadic tribes. They could not take down their dwellings and fly before the enemy as the Arabs could; so they fought to conquer or die. These mountaineers gave the

KABYLE VILLAGE AND WOMEN.

French more trouble than all the rest of Algeria put together, and it is only within the last ten years that they have been subjugated, and that they have acknowledged the French rule and authority.

Fort Napoleon, seventy-five miles from Algiers, was built in 1857 by Marshal Randon, after a successful campaign in Kabylia. It occupies the brow of a mountain at an elevation of 2700 feet, and consists of a wall with seventeen bastions surrounding an area of 6500 square feet. Within this area are all the buildings and appliances necessary for a garrison of several thousand men in case of need. It is in the centre of the richest and most populous part of Kabylia, and so effectually awed the mountaineers into submission that there were no rebellions after its construction, until the year of the German war.

These recently subdued outlying regions of Algeria are governed by what is called the Bureaux Arabes. Officers, masters of the Arab language, are entrusted with the management of certain districts with which they are expected to make themselves thoroughly acquainted. They see to the levying of the tax or tribute, principally based on the payment by the owner of a certain fixed amount for each head of cattle. They also sit as judges in all civil and criminal cases, assisted by the heads of villages, who act as a kind of jury, each in turn. We made the acquaintance of the intelligent officer who was then acting as the head of the Bureau Arabe at Fort Napoleon, and obtained much interesting information from him. The position is clearly one of great trust and power, requiring discretion, judgment, activity, and firmness. He was constantly, he said, obliged to jump into the saddle, and to ride fifteen or twenty miles or more, to superintend in person the arrest of some criminal, or to find out fraud and deception. The Arabs and Kabyles, although most fawning and flattering in their speech to their conquerors, are full of secret animosity, have no regard whatever for truth, and think it a positive merit to deceive, in any way, both each other and their French masters. Each Kabyle village is governed by a council elected by universal suffrage yearly, and the council itself is presided by the djemma, or mayor, who is chosen by its members. All

minor questions, and all subjects connected with government and discipline, are decided by this village parliament, without reference to the Bureau Arabe. But all serious matters are submitted to the latter, and any Kabyle who wishes is allowed to refer a grievance.

I was told by my informant that it is the policy of the Government to leave to the Kabyles the management of their own affairs, but to punish crime and violence wherever it shows itself in their jurisdiction, having a due regard for the feelings and even the prejudices of those who surround them. Thus, a young Kabyle wife, brutalized by her husband, had recently run away with a soldier, and the husband had applied to Fort Napoleon for assistance to catch the fugitives. This was given, and they had the night previous been found and brought back to the Fort. The wife had been restored that morning to her husband, and the soldier put in prison to be judged and punished. The wife would unquestionably, I was informed, be shot on the way home by her Kabyle husband, in accordance with their customs, but the French authorities could not protect her without interfering with the domestic rights of the conquered people. The husband had a right to his runaway wife, so she was given up to him, regardless of consequences! If a crime was committed, it would be punished later. It would appear that most of the assassinations and crimes against the person, in this country, have their origin in jealousy and quarrels about women, as in Corsica and Sardinia. The Kabyles are a more moral, as well as a more domestic, race than the Arabs, and seldom have more than one wife. If a wife tells her husband that any one has insulted her, he takes his gun and shoots the supposed offender without further inquiry. This custom gives a terrible power to the women, a power no doubt often misused. The Kabyles buy their wives for so many head of cattle, or so much money. Many of the young men expatriate themselves, going to Algiers or the other plain towns to work as labourers until they have acquired the necessary sum. Then they return to their village, buy a wife, and settle down for life, just as mountaineers, Swiss, Auvergnats, and others act in Europe, excepting the wife-buying.

We were shown by the officer of the Bureau Arabe a large Government workshop where all kinds of mechanical trades are taught to Kabyle apprentices, carpentering, forging, cabinet work, blacksmith's and locksmith's work. The intention is to propagate a knowledge of these various handicrafts amongst the mountaineers, who have a natural ability for all kinds of mechanical labour; in every village there are many who follow the various mechanical trades. The Kabyles are all Mussulmans, and like the Arabs, have amongst them many Marabouts, or holy men. The quality of Marabout is a family distinction which descends from father to son, and even the female members of these sacred families are treated with marked deference. These Marabout families have, probably, all originated with some sanctified individual who did not consider celibacy to be a necessary feature of his holiness.

After resting a couple of hours at Fort Napoleon, we returned merrily to Tizi-ouzou, in little more than half the time we had taken to ascend. There is nothing precipitous or difficult to surmount in this part of the Jurjura mountains. The elevated peaks, still covered with snow (April 20), the precipitous heights, the dark glens, are constantly in view, giving grandeur to the scene, but they are further on, beyond the fort, which seems to be at their base, although nearly three thousand feet high.

We again slept comfortably at Tizi-ouzou, and the next morning started betimes for the return to Algiers. At the junction of the road to Dellys, a town on the coast, we found an Arab fair, which gave us a good opportunity of studying the Arab type and Arab ways. These fairs are encouraged by the French authorities, and frequently take place at the principal stations; we repeatedly came across them in our travels. Hundreds of Arabs come from all quarters, and tents, large and small, are raised for coffee drinking, and for the sale of all kinds of eatables or of articles of daily use. Cattle, horses, mules, and oxen change hands, sheep are slaughtered and sold, and a vast amount of quiet talking seemed to be going on. It is a singular sight, hundreds of swarthy, olive-faced, black-eyed Arabs, wrapped in their bournous, with turban

and sandals, gravely walking about, in their own country, it is true, but subdued, conquered, civilized by the hated Giaour.

A little further on we came upon a caravan of Arabs and camels, stopping to refresh at a roadside inn. We had repeatedly met droves of from two to a dozen camels in the plains near Algiers, some heavily laden, others swinging along at a sharp trot, with the Arab driver perched high up on their backs. Nor did anything that we saw, not excepting the Palms of the Algiers Jardin d'Essai, give a more tropical and oriental hue to the country we were in. On this occasion we got out of the carriage, mounted the camels, the latter kneeling for our ascent and descent, and tried their walk and trot. We were, however, very glad to get down again; the height from the ground is too great to be pleasant, and the motion is anything but agreeable.

That evening we were again at our comfortable quarters in Algiers, having accomplished the journey to Fort Napoleon and back, 125 kilomètres each way (150 miles in all), easily and pleasantly in three days.

The next morning I devoted to a last ramble in the old streets of Algiers, and saw the Kasbah or Dey's palace, a wretched barn-like place. We were shown a little wooden room at the top of the house, looking on the inner court, where the Dey gave to the French consul the fatal tap with a fan which led to his downfall, to the destruction of the power of the Turks in Algeria, and to the establishment of the sway of a European and Christian nation over a great part of the north coast of Africa. Thus it is that great things have often small beginnings.

We started that afternoon for the excursion to Teniet-el-Hâd and the Cedar forest, on the frontiers of the Algerine Desert, leaving Algiers with regret.

ALGIERS TO BLIDAH, MILIANAH, TENIET-EL-HAAD, AND THE CEDAR FOREST.

The railroad from Algiers to Blidah turns round the eastern extremity of the Sahel hills, a few miles from the town, skirts their southern base for about fifteen miles, and

then crosses the Mitidjah. The Mitidjah is the low plain comprised between the Sahel or coast hills, and the foot of the Little Atlas range. It was the seat of exuberant fertility in the days of the Romans, but subsequent possessors allowed it to fall into a state of nature. The rainfall of the mountains which limit it to the south, prevented by the Sahel hills from passing directly to the sea, formerly saturated its entire extent, and made it an unhealthy marsh. But since the French took possession of Algiers they have been steadily draining and reclaiming this really fertile plain, at great expenditure of money and life, and have succeeded in rendering a considerable portion of it, especially the higher ground near Blidah, both fertile and healthy.

As soon as the railroad has placed the Sahel hills between it and the north, the advantage of protection is at once apparent. The Olive trees are more numerous and finer, Orange and Lemon trees appear, and it becomes clear that, with cultivation, a much more luxuriant and southern vegetation can be obtained on this, the southern slope of the Sahel, than is seen on the northern or Algerine. The plain, part scrub (Chamærops, Lentiscus, Cistus, Squill), part cultivated, is crossed by a gentle rise towards the base of the Atlas, until Blidah is reached at an elevation of about 500 feet. Protected from the wind of the Desert, or scirocco, by the Atlas, from all northern winds by the Sahel, on rising ground which prevents stagnation of moisture, with good deep soil, and abundance of water for irrigation, Blidah (lat. 36°), and that part of the Mitidjah which surrounds it, present every necessary element of fertility, and have become, since the French occupation, a very garden or orchard of agricultural products—cereals, grasses, Vines, fruit trees. It is here for the first time that the Orange tree appears in real luxuriance. There are groves, thickets of Orange trees, some several hundred years old, covering nearly 300 acres of ground, and producing excellent fruit. But even here these orchards are protected from north winds by walls of tall pyramidal Cypresses a foot apart. The Oranges are renowned all over Algeria and France, and their very

superior quality shows that the Orange tree is capable of being cultivated anywhere in the lower plains of Algeria with success, always provided it be protected from north winds, or indeed any wind, and that there be present good soil and water. This is the only point of Algeria where I found any Orange trees to be compared in point of size or beauty with those of the sun-warmed and sheltered Genoese Riviera. Elsewhere they are only met with as isolated specimens, and these seldom in a flourishing state. At Algiers, if of any size, they are hidden behind houses, and planted in well-like declivities; evidently the winter north winds are too much for them. The Lemon trees are also numerous and healthy at Blidah, but neither as large nor as luxuriant as on the north shore of the Riviera, about Monaco, Mentone, and San Remo. At Blidah I saw, as at Algiers, many healthy Aloes planted along the roadside, but they are not often met with away from Algiers.

From Blidah I made an excursion to the valley of the Chiffa, a most picturesque cleft or deep ravine in the first Atlas range, through which pass the Chiffa river and the military road to Medeah. This deep and narrow valley, with its small river brawling at the bottom, some fifty feet below the road, with sides 1500 feet high, is most picturesque, and resembles the description given of the Abyssinian valleys traversed by our troops in the late war. The road was made by soldiers, like most others in Algeria, and was a very difficult undertaking. About three miles from the entrance is a tributary stream, roaring down a side valley, which I visited with intense interest. The sides of the main valley are clothed more or less densely, according to the degree of acclivity, with the Chamærops Palm, Lentiscus, Broom, Cytisus, Wild Olive, Carouba, Cork Oak, Ilex, Aleppo Pine; whilst the bed of the stream is fringed with Oleander, Tamarisk, and Willow then in full leaf. The vegetation of the tributary gorge, called the Monkey Torrent from the number of monkeys that inhabit it, is still more luxuriant. In addition to the trees and shrubs named I found the Weeping Willow, Thuja articulata, Laurus Apollo, Celtis australis,

Viburnum longifolium, Erica arborea, all freely watered by an abundant stream of crystal water rushing over the rocks, and bound in one inextricable mass by a host of climbing plants, Wild Vine, Clematis, Smilax, Blackberry, and last in order, although first in beauty, in power, and in wild luxuriance, the large-leaved African Ivy.

This ivy had grown with such vigour in these favourable conditions of heat, moisture, and shade, that his trunk was often as large as that of the tree that he embraced. In such cases he appeared to take complete possession of the tree which gave him support, to clothe every branch with thick masses of dark glistening verdure, hanging in green loops and in masses of foliage, from limb to limb, until the identity of the supporting tree was absolutely lost in the luxuriant garb of his clinging friend. Indeed, one could not but reflect that there is such a thing as being actually overpowered, smothered, by the affectionate clinging of a friend. Next in luxuriance, without any doubt, was the Blackberry, which seemed equally to revel in this lovely gorge, creating such masses of branches and foliage that they sometimes choked the ravine.

The African Ivy is a valuable variety, for although thus delighting in moisture and shade, it can stand the glare of a fierce southern sun and feel comfortable. It is being extensively adopted in the gardens of the Riviera on that account. Under the shade of these shrubs and trees, and under that of the classical Acanthus, I found for the first time in Algeria banks of Lycopodium, and quite a collection of ferns; among others Scolopendrium, Asplenium Adiantum-nigrum, A. Trichomanes, A. fontanum, and Gramitis. In the centre of this happy valley there was a small experimental Tea plantation, established two years ago by Government. The plants were alive, but did not look very flourishing. The gardener in charge, however, was satisfied with his success, and was about to put out a large number of additional plants which had been raised in frames during the winter at Blidah. As an instance of the exuberant growth of plants in this warm, sheltered, and moist valley he showed me a Eucalyptus globulus that had grown thirty feet in two years.

I and my companions, who had accompanied me from Blidah, after visiting the ravine, had a very enjoyable repast at the little inn at the entrance, *al fresco*, in a pretty arbour. We dined to the murmur of the torrent and amidst the chattering of the monkeys, who did not show themselves, however, having retired for the night. They are the same kind of monkeys that inhabit the Gibraltar rocks, and are not common even in Algeria.

The next stage was a drive of about forty miles direct west, through the Mitidjah at first, and then over two or three low spurs and ridges of the Atlas to Milianah, a rather pretty little town, situated 2700 feet above the sea, on an esplanade on the southern slope of a mountain at least as many feet higher. Here was again evidenced the advantage of protection from the north, and of exposure to the south, *vice* considerable altitude. At Milianah, at an elevation which, even in this latitude, allows snow to lie and ice to form in winter, vegetation was more advanced, owing to the southern exposure, than at Algiers. In the public garden all kinds of Roses, the perpetual or hybrid, as well as Banksia, multiflora, monthly, and Bengal, were in full and luxuriant bloom, which was by no means the case at Algiers. A Chromatella Rose was covered with hundreds of large blossoms, and had climbed all over a tree to a height of thirty feet; I saw nothing like it in any part of Algeria. Various other garden flowers were equally in advance. From the terrace of this garden, looking full south, we saw on the horizon, on the other side of a plain fifteen miles across, and 1000 feet below us, the middle range of the Atlas mountains, rising in three successive tiers. Beyond them was the great Algerine Desert, which I intended at least to look at from the summit of one of these mountains, as I had not time to explore it. Here, too, we found tolerable quarters and a cordial reception.

Early on the morning of the 25th, descending 1000 feet, we crossed the rich valley of the Cheliff, which takes its name from the river so called. As stated, this river is a singular feature in the geography of Algeria. It rises in the last chain of the Atlas, on the north borders of the

Algerine Desert, thus showing how elevated the "Hauts Plateaux" are, passes through a cleft or gorge in the Middle Atlas, runs through the wide valley which takes its name, and finally throws itself into the Mediterranean east of Oran, after a course of 160 miles. It thus offers a circuitous funnel, or passage, by which the wind of the Desert, the south-east or scirocco, can and does pass right through the mountains until it reaches the fertile plains of the provinces of Algiers and Oran. Here its scorching breath in May or June occasionally destroys in one day or night the most magnificent crops.

As we descended from Milianah on its south side we found most luxuriant cultivation—rich orchards of Almond, Pear, Cherry, Mulberry trees, as well as the usual Fig, and abundance of pure water. At first I thought Milianah would make a good winter sanitarium; for the town is clean, with wide streets, and the view, both north and south, enchanting; but then there is the chance of a scirocco at any time from the south, even in winter, and of rain and snow from the north. The plain is evidently a mine of agricultural wealth, as evinced by the depth of the alluvial soil, shown in the furrows made by the water-courses. The cultivated patches of cereals, numerous near Milianah, scanty as we receded, were very vigorous and healthy, in full ear. There were no trees but those recently planted along the road—Acacia and Carouba, which were doing well. After crossing the Cheliff plain, about fifteen miles in width, we began to ascend the ranges of the Middle Atlas, the road winding through deep valleys and over easy ridges. In one of these valleys we stopped at a caravansail called Anseur-el-Louza, to lunch and change horses. These caravansails are fortified stations, or farms, which are built at intervals along all the roads that lead southwards. They are military posts, as well as farms and inns for travellers, and in the days of war, now happily past, were strongly garrisoned. The buildings occupy one, two, or three sides of a large square, which is completed by a high loopholed wall. There are no windows, the only entrance being by a wide portal in the centre. Thus shelter can be given to flocks of cattle as well as to

men. Even now, although peace reigns, there is a guard kept in each caravansail.

In the immediate vicinity were a number of military tents belonging to a company of soldiers, working as convicts on the road and bridge making. Many, evidently, from their fair skin and hair, were natives of the northern provinces of France. Insubordinate and troublesome soldiers in France are exiled to Algeria, and there, if still unruly, are thus sent in gangs to work on the roads in the interior. I could not but pity them, although most of them looked like caged hyænas. They were, probably, the scapegraces of their families, who not being able to bear social restraints at home, had taken refuge in the army, there to find, not indulgence, kindness and concession, as heretofore, but an iron discipline to which they must bend or be themselves broken. One of these men helped me to gather some branches to put over the carriage to shade it from the sun. I asked him what he had done to be there. He answered, "I have done nothing to speak of, but they are ferocious out there"—"*ils sont féroces là bas*," pointing to Algiers. I gave him good advice, urged him to submit, pointing out his utter helplessness before the law and his military superiors. This poor convict soldier gave utterance to a feeling which I have often thought must oppress those who have seriously infringed the laws of the land in which they live. Once found out, there is no escape but by flight, for the law is truly inexorable. And then the flight! how terrible, when every man's hand is against the culprit, when danger is everywhere. It is not surprising that many should, after a time, surrender themselves of their own accord.

We stopped more than an hour at the caravansail, and lunched under the shadow of a wild Olive tree. The shade was very agreeable, for the sun was ardent, and a wind had risen from the south since we left Milianah, blowing direct from the Desert, now very near. To our surprise we found the thermometer marking 94°, for although very hot, owing to the dryness of the air, the heat was not so oppressive as it is in England when the thermometer marks 84°. But it manifested its influence

on the economy by profuse perspiration on the slightest effort, or even without. The locality was very picturesque, a small alluvial plain, growing luxuriant crops of clover and barley, with a stream of crystal water, some ten feet wide, meandering at the bottom of the valley in a thicket of Tamarisk and Oleander. On each side were the slopes of the mountain ridges, sandstone and gravel, covered with rock Roses in flower, Maritime Pines, and Thuja. In the middle, the square fortified station, loopholed for musketry, with the white bell tents of the convict soldiers, and of their guard.

Here we sat for some time reclining on the grass, as if we had been in England, for there was grass on the shady side of the tree, and feeling intensely the strangeness of our situation, in the bosom of the Atlas Mountains, within a few miles of the great and mysterious Desert. I doubt, however, whether we were prudent in thus lying among the brushwood in northern fashion, for after a time, my American friend espied something moving under some twigs, and on a nearer survey, we found that it was a large scorpion. He at once seized a stone, and incontinently smashed him, whereon the ladies declared that it was time to depart. We carried enemies away with us, however, very venomous ants I believe, for I and another of the party were so severely bitten that it took weeks to efface the stigmates. We were told by our driver that this valley was so renowned for the size and number of the scorpions that inhabit it, that it is called "the valley of the scorpions!"

The road continued to ascend and descend mountain ridges and spurs for some hours more, until we reached our destination at the head of the pass in the last range, Teniet-el-Hâd. The rocks and soil from the Cheliff plain to this station are everywhere sandstone, gravel, and mica-schist, and the vegetation is all but identical with that of the same soils in Corsica—Lentiscus, Arbutus, Ilex, Cork, Oak, very large wild Olives, Aleppo Pine, Juniper, Genista, Cytisus, Mountain Lavender, Cistus, white and rose, Willow, Smilax, Mountain Ash, Asphodel, Ferula, Scilla maritima; Chamærops, Thuja articulata;

Oleander and Tamarisk, fringing the rivers or torrents. We greatly enjoyed our leisurely progress through this lovely mountain scenery, despite the glow of a southern sun, and the most oppressive heat of the scirocco. Our attention was repeatedly attracted by large grasshopper-like locusts, which flew across our path, and even into the carriage.

Teniet-el-Hâd is a fortified military outpost and station, occupied by a garrison of 3000 men—1000 cavalry, 2000 infantry—by the settlers who minister to their wants, and by a few farmers or colonists, as the French call them. I estimated it to be 4000 feet high by the barometer. It is situated on a neck or pass of the Middle Atlas, from which the road descends into the Algerine Sahara, or the Desert of Angad. The Atlas peaks in the vicinity ascend nearly 2000 feet higher. The village itself presents nothing remarkable, merely consisting of barracks, stores, a few one-storeyed houses, occupied by the tradesmen, and a very inferior inn. The owner is a prosperous colonist, who has a large corn farm five miles further south towards the Desert, the last agricultural settlement belonging to an European. Teniet is the centre of the French military power in this region, and the support of the garrisons in the oases, and of the flying columns in the Desert due south. There are similar stations all along the more southern ridges of the Atlas, such as Biskra, Boghar, Tiaret, Saïda.

A couple of miles to the west of Teniet there rises a noble mountain peak, at least 1600 feet higher, the flanks of which are covered by a magnificent Cedar forest, much larger and finer, I am told, than that which clothes Mount Lebanon. We determined to devote a day to the forest, and after an early breakfast started in our carriage, with some misgiving, as we were told that the road, a mere cart road for timber, was scarcely practicable to a carriage. However, we managed in about three hours to accomplish twelve miles, which brought the road to a termination in the very heart of this truly mighty forest. The road ended in a woodland amphitheatre, surrounded by magnificent Cedar trees, carpeted by a velvet turf worthy of Erin, with a

small pellucid lake in the centre. Here we found a party of French officers from Teniet, enjoying a picnic breakfast, and were most hospitably received by them.

Between us and the summit, however, between us and the view of the Desert, there was still a mountain peak, 1200 feet above where we were. None of the officers, or of the workmen and timber-cutters had been up it, there was no road, and the sides of the mountain were very steep. But we were determined not to go back without seeing the Desert from the top of Mount Atlas, and bravely commenced the ascension. Even I managed to scramble up, in due course, by holding the barometer in one hand and resting five minutes every hundred feet of ascent. Although the mountain sides were clothed with successive stages of grand Cedars, we found the ascent very difficult. Once at the summit, we were amply rewarded for our trouble and fatigue, as a most glorious sight was unfolded to our view. To the north were the grand old Cedars covering the mountain flanks, the two lower ridges we had crossed the day before, the plain of the Cheliff, and the high mountain on the south side of which Milianah is situated; to the south the Desert.

The Cedar trees at our feet, to the north, were most venerable and majestic, and rose in successive layers or stages over an immense extent of the mountain side, as far as the eye could reach east and west; for they cover an area of 6000 acres. As they grow old they spread out their upper branches so as to present a regular table of verdure when seen from above. Many of these green table-like summits, formed by single trees, appeared large enough to admit of a company of soldiers bivouacking on them. Some, cut and lying on the ground, we measured, and found that they were from twenty-four feet to thirty feet in circumference, or from eight to ten feet in diameter. The forest belongs to Government, and many trees are being cut down to make sleepers for the railway, a rather sacrilegious use for massive beams of Cedar wood.

The ground underneath was enamelled with flowers: Hyacinths, Narcissus, Buttercups, Roses, Daisies, Pansies; whilst the Honeysuckle and Bramble grew vigorously,

often from cavities in old Cedars. Perhaps the seeds of these plants, the Hawthorn for instance, may have been brought by some bird of passage from the far north, for I recognised the note of birds that regularly visit the Pine woods of Surrey during the summer. Snow still filled the ravines, 200 or 300 feet from the summit, whilst the thermometer, even at Teniet, was 86° when we left. We heard the cuckoo sing, and saw many jays and ravens. There were many deciduous Oaks of considerable size, just beginning to put forth their new leaves. In a word, whilst sitting under the shade of the Cedars, and looking into the Great Desert of Sahara, we were surrounded by the vegetation of an English wood in May, and at the summit enjoyed the delightful coolness of an English spring. The soil was a deep rich leaf-mould, the result of vegetable decay for thousands of years. On passing it through my hand I most ardently wished I had an unlimited supply of it in my rocky garden at Mentone. What Camellias, Azaleas, and Rhododendrons I could then raise!

When turning from the north we gazed south, we saw at our feet a gentle mountain slope, of about a thousand feet, covered with scrubby Dwarfed Ilex, then gently undulating plains green with grass and cereals, then a green plain perfectly flat, and then, about ten miles beyond us, the real Algerine Sahara, or the Desert of the High Plains (Hauts Plateaux), a level yellow sea of sand. On the far off southern horizon, about fifty or sixty miles distant, was a low ridge of mountains, the Great Atlas, the last mountain chain, and the northern limit of the Great Desert, which extends to Soudan, to Timbuctoo, to Senegal, to the Niger! The abundant winter and spring rains, precipitated by old Atlas, had clothed even the high plains which form the margin of the Desert with verdure, but all tree vegetation ceased a thousand feet below where we were standing, except in the beds of torrents or rivers, or in the oases.

The rain which falls abundantly in winter on the ridges of Mount Atlas, and even on the limestone hills south of the Atlas, in the northern regions of the Great Desert (see map), gives rise to torrents and rivers in winter, which flow down the slopes of the mountains and hills,

north and south, to lose themselves in the sands, or in shallow salt lakes. Often these torrents, although lost to the eye in the sands, are running their course at some distance underground, and reappear as springs, or terminate in the lakes or Schotts above mentioned. An oasis is a spot which a torrent or river irrigates, or where these springs or underground rivers appear at the surface, or can be reached by wells. Nearly all surface waters, torrents, rivers, springs, even the shallow lakes, apparently disappear during the summer. I say apparently, because water is generally to be found underground, more or less near the surface, in these northern regions of the Great Desert, due, no doubt, to the watershed of the Atlas. Wherever it can be reached, even by deep wells all the year round, vegetation becomes possible and trees flourish, especially the Date Palm, as also various fruit trees, such as the Apricot, the Peach, the Pomegranate, and all kinds of vegetables.

The tree that constitutes the riches of the Desert, that thrives the best, and that more especially characterizes its sandy plains beyond the Great Atlas, for it does not grow in the Hauts Plateaux, is the Date Palm. It flourishes and ripens its fruit in the most sterile sands—in sands all but devoid of alluvial soil—if it can get water. Nor is it particular as to the kind of water; saline water, that even the Arabs cannot drink, agreeing with it perfectly. In Algeria proper, once the city of Algiers has been left, the Palm is scarcely ever seen. It is not a feature of the landscape, as is generally supposed and stated. No doubt it would grow very well in any of the lower plains of Algeria, but I believe it does not ripen its fruit out of the Desert, the climate being too moist and cold in winter, so that there was and is but little inducement to the inhabitants to plant it. In partly civilized or colonized regions very little is done for the ornamental, and the trees and shrubs that have not a direct practical purpose to serve are seldom seen, except in a wild state. As previously stated, the Date Palm is infinitely more common in the south-east of Spain as a relic of the Moorish civilization of former days than in Algeria, north of the Atlas. There must be a great difference in the winter climate of the oases of the Desert and

in that even of the valley of the Cheliff, the warmest valley in Algeria, for cereals are ripe and garnered in March in the oases, whereas I found them only just turning colour at the end of April in the Cheliff plain, near Orleansville, the hottest part of the valley.

The sands of the Desert are siliceous, but contain, as we have seen, a good deal of lime, which seems to be the kind

THE DESERT—A PALM OASIS.

of soil that suits the Date Palm the best. Thus, the soil of the Jardin d'Essai at Algiers is composed of loam mixed with sand, formed by the break-up of granite and calcareous mica-schist, whence, no doubt, one reason why it succeeds so well with the Palm tribe, which certainly seems to prefer such soils. On the Genoese Riviera at Bordighera, where the Date Palm is more luxuriant in growth and numbers

than in any region of Algeria that I have seen on the north side of the Atlas—the Algiers Jardin d'Essai excepted—the soil is a mixture of siliceous sand and of calcareous loam, the coast rocks being calcareous. The Roya River, which comes down the valley of that name from the Col de Tende, where the mountains are granitic, has brought, in the course of ages, enough sand to form at its outlet several miles of sandy delta, or alluvium, which extends to the Bordighera Palm groves. Not that Palms will not succeed well in other soils, for they thrive in the purely calcareous soils of Nice and Mentone, but they certainly appear to grow most luxuriantly where sand is combined with lime. Such is also the case, as we have seen, on the east coast of Spain, at Elche especially which must be the counterpart of a Palm oasis in the Desert.

Beyond the mountain chain of the Middle Atlas on which we stood there are even but few shrubs out of these areas of natural irrigation. The last to disappear are the Pistacia Terebinthinus, the Lentiscus, and the Jujube or Zizyphus Spina Christi. This latter plant shows itself everywhere in Algeria; in winter it is a mass of slender, naked, thorny branches, twined in and in, and lying on the ground, like dead brambles. When spring arrives it throws out a profusion of pale green leaves, which conceal its thorns. We found it in the Mitidjah, it followed us to Mount Atlas, and we were told that, with the Squill, it was almost the last to disappear in the Desert. It is clearly the thorn of Solomon: "as the crackling of thorns under a pot, so is the laughter of fools."

The descent of Mount Atlas occupied us very much less time than the ascent. We were sorry to leave the grand Cedar forest, even to return to the "Corsican maquis vegetation" on the gravel ridges around Teniet, beautiful as it is at this time of the year, with its myriads of flowers, among which predominate the profuse yellow spikes of the Broom and Cytisus. We were told on our return that we had been imprudent to wander so far from the haunts of man, as lions, panthers, and wild boars still haunt these mountain forests, although in rapidly diminishing numbers. We had been in happy ignorance of all possible danger, so

merely laughed at the risks run, which gave additional zest to our view of the Desert. We were all of us, the ladies especially, most anxious to pursue our journey into the real Sahara Desert, but we had not time. Moreover, with the thermometer at 86°, 4000 feet above the sea, I thought it imprudent to venture further south, so we reluctantly decided to retrace our steps.

The next morning, April 26th, I was awakened at five in the morning by the beating of drums, the blowing of bugles, and all the sounds of war. As Teniet is an outpost of the French army on the borders of the Desert, I thought it was some review or military ceremony. On rising, however, I heard that news had arrived in the night that an army of locusts were marching on, along the road, from the Desert, towards the pass, and that a thousand soldiers had started as soon as it was daylight to meet the enemy! It appears that the locusts, when they invade Algeria from the Desert, make for the passes through the Atlas, and if there is a road follow it, camping regularly at night. The locusts we had met on our journey, two days before, were no doubt the pioneers, the advanced guard of the main army, now in full march. The troops were to endeavour to force them back in the day by noise and with branches of trees, and at night to make deep holes in the ground, sweep them in, and bury them. I left the same day, and heard no more on the subject. But later, whilst in Spain, I learnt that the locusts succeeded in crossing the Atlas, and spread over the fertile valleys of the Cheliff, doing much damage, and destroying many of the magnificent crops which had everywhere met my gaze; as they had done three years before. Thus the French soldiers, whom I saw going out to fight this apparently contemptible enemy, must have failed in their efforts, and have been signally defeated. They could conquer the Kabyles, the Arabs, the wild denizens of the Desert, but they were conquered in their turn by an army of grasshoppers; a singular history.

The return journey to Milianah was successfully performed in a day. The scirocco had gone, the temperature had fallen to 70°, and both I and my American friends

greatly enjoyed the drive. An intellectual and well-informed inquiring friend, like the one whose companionship I had, is a most valuable adjunct to the kind of journey we were making. Constant questions and debatable opinions thrown out, on both sides, sharpen the wits and enlarge the field of observation. Such communion tends to strengthen and give a form to ideas that might otherwise have remained dormant, or have been only half formed in the mind's recesses. We again lunched at the caravansail, but this time on the hard ground, far away from scorpions and venomous ants. As we approached Milianah it appeared a most fascinating sojourn, perched up on a ledge of the mountain, a thousand feet above the plain, with a protecting screen from the north nearly two thousand feet high behind it. I cannot but think that notwithstanding the occasional breath of the Desert from the south, and an occasional fall of snow from the north, it must be a delightful winter residence. Then it could be made a centre for excursions to the Desert and to the oases that we only saw at a distance. I do not advise any very great invalid to try it, but a person merely weary of town civilization, and slightly failing in general health, might certainly test its climate in perfect safety. At Milianah, also, there are all the resources of a French town—good French society, and plenty to eat and drink; we had comfortable rooms, and fared very well whilst there. We had left one member of our party behind, a gentleman who did not feel well enough to venture on "the unknown" when we started. I proposed to him to winter there next season, but having been condemned to silence for three days from ignorance of the French language, he said he had had quite enough of Milianah, pretty as it is, for the rest of his life, and that I must look out for some other victim.

MILIANAH TO ORAN.

The last part of Algeria that I examined was the valley of the Cheliff, from Milianah to Oran, about 150 miles from east to west. The first day we drove to Orleansville;

the second to Reliziano, the point then reached by the railway from Oran to Algiers; the third day we took the railway to Oran.

On leaving Milianah we again descended into the valley of the Cheliff by the road we had twice traversed, but on arriving at the river, turned to the west instead of crossing the valley as before. Here we found the railway works rapidly advancing. From Blidah, where we had left it, the rail passes the Little Atlas by a break or deep valley, emerges on the valley of the Cheliff near Milianah, and follows its course for more than two-thirds of the distance to Oran. The high road also follows the river and the wide and fertile valley through which it runs.

Soon after our departure from Milianah the geological character of the mountains changed, they became calcareous, rising on both sides of the valley in gentle sweeps 1000 or 2000 feet high, with higher ridges of the same character behind, both northwards to the sea, and southwards towards the Desert. The valley itself contained a bed of vegetable soil, ten, twenty, or thirty feet deep, resting on limestone or gravel. Gradually, as the geological formation changed, so did the vegetable. Nearly all the plants so common on the sandstone, gravel, and schistic soils, from the Chamærops to the Cistus, became less frequent, then sparse, and ultimately disappeared. The Jujube Thorn alone remained, and here in a lower latitude, and later in the season, it had become covered with fresh green leaves, and was quite an elegant shrub, instead of a mass of apparently dead thorns. The hill-sides ceased to grow trees, with the exception of a few small Ilex or wild Olive, sparsely scattered. The rich alluvial plain was a mere rolling prairie or steppe covered with rank herbage and with wild flowers where not cultivated; there was not a tree to be seen for miles. Along the road and near the villages were some farms, and here and there the Arabs had tilled and cultivated patches of corn. Wherever the labour of man had broken the ground most exuberant fertility had followed, and the trees he had planted near farms and small villages—Mulberry, Carouba,

Acacia, Plane, Orange, Apricot, Peach—all seemed to thrive and flourish.

The puzzle to me was, and is, why does not Nature do her own planting in these rich alluvial plains, as elsewhere, as on the sandy schistic rocks? The grasses were two or three feet deep, and mingled with myriads of flowers, Corn-flowers of various kinds, Ox-eyed Daisies, Dandelions, Buttercups, Pheasant's Eye, Marigolds, Vetches, Wild Peas, Mustard, Convolvulus (major and minor), Thistles, Mallows of various species. These flowers were not disseminated here and there, but growing in masses, knee-deep, as if artificially planted, until their bloom coloured the ground for miles. The fields of Wheat, the bearded variety, were turning colour, and were rendered scarlet by masses of Corn Poppy. Here, on every side, was evidence of abundant winter and spring rains, which had brought to life and fostered so much luxuriance, and which would do the same were cereals or grasses planted by man. But I was told, that in six weeks there would not be a blade of grass left, that all would be burnt up by the summer sun and heat, and that there was no remedy, as there was no available water in the country. That of the river is not good, and is not easily attainable, for it runs in a canal or furrow often thirty feet deep, worn in the alluvial soil. The wells, although from fifty to eighty feet deep, do not always reach good water. So, for want of irrigation, the land has to be left to itself until winter rains return in November; the Government has plans for artificial irrigation on a large scale under consideration.

It is easy to understand why the sides of a limestone hill should not be clothed with timber, for the roots of most trees and shrubs cannot and will not pierce limestone, as they can and will pierce sand, gravel, sandstone, or schistic shales. But it is difficult to understand why the seeds of trees dropped by birds, or carried by the wind, into the crevices of good deep soil, cracked by summer heat, and well watered for months in winter, should not germinate and grow, as they do when planted by man. Yet, as in the American prairies, in Algeria we see this

plain of the Cheliff, 200 miles long and from ten to thirty wide, with its deep rich loam profusely watered for six months of the year, all but entirely devoid of spontaneously grown trees or shrubs.

During these days of pleasant travel I often sat near the drivers, and obtained a great deal of valuable information from them. The Messagerie "authorities" at Algiers treated us throughout with great consideration. Not only did they provide us with a comfortable carriage, and frequent relays of horses, but they told off their inspectors to drive us. The first called me "Milord," and on my telling him that I had no claim to such a dignified appellation, he said that he thought we must be at least "Milords," as he and his colleagues were never called upon to drive any but the Governor. We profited, however, by the error, for we generally had the very best horses the stables could afford, and flew along the roads, nearly always good, each day arriving at our destination an hour or two before the time fixed.

The horses driven were always of pure Arab breed, and showed a speed and endurance that quite surprised us; they seemed to think nothing of twenty or thirty miles at the full trot. I was told that with a light carriage they could easily do sixty or seventy miles a day. One of the inspectors said he had repeatedly driven one of the horses then in the carriage a hundred and forty miles in two days in a light gig. Every kind of European horse has been tried on the roads in Algeria, but none can stand the climate and the work, the heat of summer, the moisture, coolness, and night fogs of winter. All break down except the native Arab, which they drive exclusively. No doubt the constitution of the equine race has become modified in the course of centuries, like that of the native human tribes, so as to thrive and flourish under conditions inimical to more northern races. The country does not produce enough of these Arab horses for its own requirements, so their exportation is not encouraged.

The towns of Orleansville and Reliziano are mere military and government stations, like Blidah and Milianah. They contain well built barracks, store warehouses,

hospitals, modest town halls, with accommodation for the government offices and law courts, small inns, with some one or two-storeyed houses for tradesmen, and a few farm houses and cultivated farms within a mile or two of the town. The latter are occupied by colonists established on purpose to supply the wants of the adjoining population. Beyond there is little else but the wild grass and flower-covered prairie, varied, every now and then, by an Arab encampment. The inns were humble, but we everywhere found very tolerable fare, as I always have done in French territory, without having to fall back on the national Arab dish, the kouskousou. The kouskousou is composed of wheat or barley flour, moistened with water or milk, and rubbed into pellets by the hand. It is steamed two hours, flavoured with salt or sugar, and eaten with dates and raisins, or with a fowl or a piece of mutton.

What I had heard at the Trappe monastery was everywhere confirmed. Most of the colonists who accept grants of land from the Government die off in a few years, from fever and dysentery and their consequences. Their small means are exhausted in clearing the land; they have often, at first, to camp out under tents, or in badly built huts, exposed to the intense heat of the day and to the moist chills of the night—according to Dr. Armand, the real cause of fever, not marsh emanations. They are badly fed, frequently drink, and often know nothing of farming. Being mostly people who have failed in life in Europe, they have the mental defects of those who do so fail—want of judgment, want of forethought, want of power to combine. Thus in a few years they disappear, and are succeeded by a higher class of farmers, men who belong to a higher social and mental grade, who have a little capital, and know how to use it. As I have already stated, they succeed and keep their health, where their predecessors failed and died. I believe this is also the case in our own colonies. To succeed, forethought, self-control, sobriety, perseverance, intelligence, are required. Those who do not possess these qualities fail everywhere.

There is an exception, however, to this sad colonizing picture. It is when men of capital and of fair mental

calibre, men who would do well at home, buy land, either first or second hand, have the means to wait until returns come, and also the means to tide over years of drought or of destruction by locusts. As they have the knowledge and the prudence required for success anywhere they do succeed, and eventually make twenty or thirty per cent. of the capital invested. Thus I was told of an English gentleman, with three sisters, who bought an estate already in cultivation, with substantial healthy residential and farm buildings, near Blidah, for three or four thousand pounds, a few years ago, and was reaping a golden harvest.

We came across several Arab camps in our drive through the Cheliff valley, and as we stopped and visited them, we obtained a very good idea of what Arab life in the tent really is. The engraving is an admirable representation of the real Arab tent, and of its inmates, on a fine day, when the sides are raised. Multiply this tent by many, and the camp is formed. It was in such tents, made of camel skins or camel haircloth, supported by poles, that the patriarchs of Scripture, Abraham and Isaac, lived and died.

The two sketches—that of the Kabyle village and that of the Arab tent—give the key to the native populations of Algeria, and to their history past and present. The Algerine Arabs are nomads, of the same race, and having the same habits as the Arabs of Arabia, and of the North African deserts. In winter they camp on the plains of Algeria, within certain limits for each tribe. In summer, they ascend to the lower Atlas mountains; also within prescribed limits for each tribe. The Kabyles or Berbers, on the contrary, as we have seen, are stationary agriculturists. The nomad Arabs fought but fled before the enemy, carrying on a guerilla warfare. To subdue them France has had to successively conquer and take possession of the Little, Middle, and Great Atlas ranges, of the intervening valleys, and even of the oases of the Great Desert, that they might have no asylum to fly to. The Kabyle mountaineers, tied to the soil by their possessions and habits, had no refuge open to them, even of a temporary nature, for they are of a different race to the Arabs,

AN ARAB TENT.

and there is animosity between them. So they fought with the energy of despair until finally subdued.

It is now more than forty years since France first put her foot in Algeria. I was then a youth in Paris, and I well recollect the enthusiasm with which the news of the occupation of Algiers was received, just before the famous days of July, which I also witnessed. Little did France then know what a Herculean task she had undertaken—what treasure and blood it would cost to establish her sway over the wild tribes of North Africa. But the great deed has at last been accomplished, and the long years of constant war have at last ended in the conquest and pacification of the entire country, from Morocco to Tunis, from the Mediterranean to the last oases of the northern regions of the Desert. Before this was attained, however, each chain of the Atlas had to be disputed with the Arabs, mile by mile, each village of Kabylia had to be fought for with the Kabyles; and hundreds of thousands of French soldiers have perished by the sword or by disease. Now that all Algeria is under the dominion of the French nation, order and security to life and property reign everywhere. In the towns actually settled, the centres of the local government, the French code is enforced. In the outlying stations the authority of the Bureaux Arabes brings European views of justice to bear in a more summary, but most salutary way. Nor must we forget that it is a Christian people who have done and are doing in Algeria what we have done and are doing in other Mahommedan countries, in our Asiatic possessions. The gain is the gain of Christianity and of civilization, and all the Christian nations of Europe ought to feel that they owe a debt of gratitude to France for what she has accomplished, and willingly to help her in her great and noble enterprise.

The prosperity of Algiers as a colony, however, is much marred by the narrow-minded commercial policy of the French nation. Their wish is to colonize Algeria, to make it support itself, instead of costing the mother country a million sterling yearly, as it now does. To effect this France ought to open the Algerine ports to all flags, making them all free ports, levying duties only for the

purpose of revenue. Instead of that, all the cumbrous duties and prohibitions of the French custom-house are in force, and heavy differential port duties are levied on foreign shipping. French colonists, as exporters, are thus placed at a great disadvantage when compared with those who cultivate the soil in the mother country, the natural market for their productions. They pay more for everything they use and consume, not produced in Algeria, and have to sell at a much less profit when they export, on account of freight, port dues, and commission expenses. Hundreds of foreign vessels are said to pass the Algerine ports, in ballast or in distress, without entering, on account of the port dues. If allowed to enter nearly free, such vessels would make a point of paying Algiers and Oran a visit to see if they could get cargo, or to refit; as it is they pass on. As long as Algeria is thus governed it will remain what it now is—a military colony. It is to be hoped, however, for the sake of humanity, that more enlightened counsels will eventually prevail.

Throughout this journey I never lost sight of the object for which I had come to Algeria, viz., to study its climate as a winter sanitarium. Every observation made with reference to botany, horticulture, geology, races, local habits, was mentally scrutinized with reference to this point, and it now only remains for me to state the conclusions at which I have arrived. Previous, however, to recapitulating the data on which these conclusions are founded, I would remark that they are so consonant with the laws of physical geography, as elucidated by the labours of Captain Maury, Keith Johnston, and others, that, given the data, they could be arrived at without leaving London or Paris.

As we have seen, Algeria is a mere Switzerland, some twelve hundred miles from east to west, some two hundred from north to south, formed by a series of mountain ranges, the Atlas, and by intervening valleys. As the highest ranges, the Jurjura, do not rise above 7000 feet, there are no large glaciers as in the Alps, the Himalaya, or the Andes, to form the sources of large rivers.

To the north we have the great inland sea, the Mediter-

ranean, about five degrees of latitude or 300 miles across; to the north-east the basin of the Mediterranean in its entire breadth; to the north-west the Atlantic Ocean; to the south the great burning Desert of Sahara, which extends over a considerable part of the African continent.

The atmosphere which lies on this immense rainless tract, or desert, becoming heated both in winter and in summer, rises into the higher atmospheric regions, and thus forms a vacuum which the cooler and heavier air of the Mediterranean and of the Atlantic rushes down to fill. The latter is thus positively "sucked in" over the summits of the mountain regions of the northern shore and of the Atlas ranges; consequently in Algeria the regular winds must be either north-west or south-west, or north-east; and south or south-east winds can and do only reign exceptionally. These direct winds coming from the ocean or the sea are moist winds, and, being brought in contact with the Atlas mountains on the very shore, are, in winter, so cooled down that they deposit their moisture in copious and frequent rain or snow over the entire Algerine and Atlas region, and into the Desert of Sahara, for 250 miles or more from the sea. This rainfall occurs from October or November to April or May. In summer the very mountains themselves become so heated with a nearly tropical sun and with the breath of the Desert, that the moisture of the northerly sea winds, when they blow, is no longer precipitated, but passes over them and into space. As, however, the air is moist the night dews are very heavy throughout the hot summer season, unless the scirocco blow from the Desert as a dry hot wind.

Thus is explained the climate of Algeria. It is a tract of mountains, valleys, and contained plains, abundantly watered by cool northern rain clouds on the plains and lower mountains, and by rainfall and snow on the higher elevations, during nearly six months of the year, which makes it a garden of fertility. Mr. Tristram, in his most interesting work entitled "Wanderings in the Desert," says that he often saw hoar frost in the oases a hundred miles south of the Great Atlas. Thus, although burnt up by tropical heat during the summer, owing to its latitude and to its prox-

imity to the Great Desert of Sahara, the province of Algeria does not appear, by its vegetation, to possess a warmer winter climate than the protected regions of the north shore of the Mediterranean, such as the undercliff from Cannes to Leghorn; at least during the daytime. But there is more rain, more atmospheric moisture, and the nights are warmer. This latter fact is explained by the heat being more the result of latitude than it is, say at Nice and Mentone, where it is principally produced by the direct rays of the sun impinging on the land from the south, with shelter from the north behind. On the other hand, the intense heat of the summer, greater than on any part of the continent of Europe, explains the greater luxuriance of some forms of vegetable life.

I can certainly state, without any reserve, that the entire country visited between the 15th and 30th of April, from the frontiers of the province of Constantine to those of Morocco, from the Mediterranean seashore to the Desert, which lay at my feet when on one of the highest summits of Mount Atlas, was clothed with the most luxuriant vegetation. The mountain sides, the valleys, the plains, were all covered with trees, shrubs, flowers, or grasses. The entire country must have been irrigated, well watered, by Nature, every few days for months; no other atmospheric condition could explain such widespread, such universal luxuriance of vegetable life.

Algeria is certainly not a dry climate either in winter or summer, except when the scirocco blows. The average rainfall at Algiers is 36·18 inches, disseminated over the autumn, winter, and spring months, instead of 22 inches as in England. The night dews are very heavy, which is owing to the atmosphere being constantly loaded with moisture, and to its being precipitated when the thermometer falls, even slightly, at night. This fall takes place as on the northern shore of the Mediterranean, but by no means to the same extent.

The city of Algiers is more favourably placed than any other part of Algeria, from its having the additional protection of the Sahel hill. Owing to the Atlas mountains being covered with snow in midwinter, even south winds may be cool or cold. When the Atlas snows are melted

these same south winds become very objectionable, as they then blow directly from the Desert, and are intensely hot.

I have so far spoken of the climate of Algeria entirely from my own observations during this spring visit, and from deductions thereon founded. On consulting the most valuable and interesting work by Dr. Armand,* which I have already quoted, I find these deductions entirely confirmed by his actual experience, which extended over many years' military service in Algiers and Algeria.

Dr. Armand states that the seasons cannot be divided into four, as on the continent of Europe. There are in reality only two: the winter season, or cool rainy season, beginning with November, ending with April; and the summer, or hot and dry season, beginning with May and ending with October. The mean rainfall from 1839 to 1845 at Algiers was 36 inches, 31 of which, or six-sevenths, fell in winter, and only 5, or one-seventh, in summer. It was thus distributed:—

	Inches.		Inches.
November	5	May	1¼
December	8	June	0¼
January	6	July	0
February	5	August	0¼
March	3	September	1
April	4	October	2¼
	31		5

In 1843 rain fell on 90 days, as follows:—

	Days.	Nights.		Days.	Nights
November	10	10	May	3	1
December	5	2	June	2	0
January	10	7	July	0	0
February	9	7	August	0	0
March	9	6	September	2	0
April	1	2	October	3	1
	44	34		10	2
	78			12	

* Médecine et Hygiène des Pays chauds et spécialement de l'Algérie et des Colonies. Par le Docteur Adolphe Armand. Paris, 1853. (Challamel.)

Dr. Armand gives 64° as the mean annual temperature of Algiers:—first quarter, 55°; second, 66°; third, 77°; fourth, 60°; =64°. But these trimestrial means are very deceptive. October and March are warm, January is cold.

The atmosphere, heated by the burning breath of the scirocco, or wind from the Desert, does not usually cool down until the end of October. At that epoch or early in November, the air cools with a westerly wind, clouds form on the sky, and such torrential rain falls, that only houses very well-built can resist them, and the smallest torrent becomes an impetuous river, inundating the plains. Whilst the plains and valleys are thus inundated by the rainfall, snow falls on the mountain zone, and remains in mid-winter down to a level of about 1600 feet above the sea. The higher summits continue white with snow from November to March, and some of the highest mountains, such as the Jurjura (7000 feet), are snow-covered for ten months of the year. We ourselves found masses of snow above Teniet-el-Hâd, overlooking the Desert at an elevation of 5600 feet, on the 25th of April. Snow seldom falls on the shore, but when it does, it melts at once, as on the Genoese Riviera. Snow thus fell at Algiers in 1845, and there were both snow and ice in 1842. In the Algerine Sahara, beyond Teniet, in the high plains of the Chotts, or salt-water lakes, the cold in winter is often very severe. On the 19th of April, 1847, there were two feet of snow on these plains, and advancing troops have frequently been driven back by the inclemency of the weather.

In the retreat from Constantine the French were obliged to raise the siege and to retire, not so much from the resistance of the Arabs, as from the inclemency of the season. In January, 1846, the disasters of the campaign of Russia were reproduced on a small scale; the Sètif column, exposed to snow-storms in the mountains of Bou Taleb, was obliged to return to Sètif with 530 cases of frozen extremities, leaving on the road 208 dead soldiers (January 3).

The most frequent winds in winter are the west and north-west from the Atlantic, and the north-east from the Mediterranean; the least frequent is the south, or scirocco,

itself a cold wind when the mountains are covered with snow. When the wind blows from the north-west, or south-west, and a feeling of coolness is experienced, rain may be predicted without consulting the thermometer. This sea-wind is so loaded with moisture that contact with the cool mountains is sufficient to discharge it in rain. During these rains the air is so moist that the wet and dry thermometers all but mark saturation.

As in England, and in every other country, there are occasionally exceptional winters, winters of unusual drought at Algiers and in the lower plains. It was so a few winters ago, and a famine was the result.

In April the rains become less frequent, the sky is less covered with clouds, the weather is warmer. May is the finest month of the year, although the scirocco sometimes blows towards the latter part, and gives rise to extreme heat.

During the six summer months the sky is of a pure blue, the light intense, and the heat very great, especially if the wind blows from the Desert, which it does for about twenty-five or thirty days, on an average, at different periods. The inhabitants of the coast are then better off than those of the interior, as the air is refreshed by the sea-breeze. The thermometer is often at 98, blood heat, and sometimes much higher. The falling of the thermometer at sunset is sufficient to produce so abundant a deposit of dew that it saturates everything whenever the wind is in a northern quarter. When it blows from the Desert, the air is, on the contrary, very dry. These climate conditions produce fevers, dysentery, ophthalmia, and other tropical diseases.

On the morning of the 30th of April we were in the railway car at Reliziano, the temporary terminus of the railway, now completed to Oran. At twelve we arrived at Oran, a clean seaport presenting a thoroughly French aspect; and here my exploration of Algeria ceased for want of time to continue it, but my object had been fulfilled.

CHAPTER XVI.

TUNIS AND TUNISIA.

VOYAGE FROM CAGLIARI—SITUATION—THE CITY—VEGETATION—THE BARDO—GARDENS—TUNISIA—THE CLIMATE.

On Sunday, May 3rd, 1874, I embarked for Tunis at Cagliari, in Sardinia, at six P.M., in a very tolerable Italian steamer, built at Glasgow, as are most of the Italian steamers. The north-west wind, which had been coursing down the plains of Sardinia all the time I was there, hurrying to Central Africa, helped us across, although giving rise to a very heavy sea. I was, however, prepared to encounter rough weather in this part of the Mediterranean, so did not feel aggrieved. On the south shores of the Mediterranean in the winter, the wind is generally north-west or north-east, no doubt owing to the attraction exercised by the Desert of Sahara. Thus even when the barometer is high, and the weather is fine, there is mostly in winter, perhaps also in summer, an agitated sea near the coast, instead of the calm which often reigns on the north coast of the Mediterranean. Such, at least, I have found it in spring, and the remark has been confirmed by nautical men. The existence of all but constant north winds during winter and spring on the south shores of the Mediterranean, owing to the attraction of the Sahara, is an important fact with regard to climate and vegetation, as explained in the preceding chapter.

Tunis is situated at the base of a wide gulf or bay, on a strip of rising ground between and on the margin of two large salt-water lakes, and is ten miles from the sea and from the landing port of Galetta. It is connected with the latter by a railway, built with English capital and managed by English officials. It is in latitude 36° 35′ N., and longitude 10° 16′ E.; 380 miles east of Algiers, 275 north-west of Tripoli, 150 south of Sardinia, and seven degrees, or 420 miles south of the Genoese Riviera. The

population is 130,000—a mixture of Moors, Turks, Arabs, Jews, and Christians.

Tunis is thoroughly eastern in its character; the streets are mere lanes or alleys a few feet only in width, through which no carriages can or do pass. Here and there are narrow streets of the same type, but covered over, which are called bazaars. On each side of these narrow streets are the shops, which consist of recesses from six to twelve feet wide, and the same in depth; they occupy the entire front, which is thus completely open. On a counter on one side are the goods, and behind, or on a counter on the opposite side, sits, cross-legged, the merchant, Turk, Arab, or Jew. Each covered area of alleys which constitutes a bazaar is generally devoted to one trade, the shopkeepers all selling the same goods. Thus there is a bazaar for jewellers, others for drug-merchants, woollen-merchants, grain-merchants, and so on. These bazaars are regulated by certain laws and customs, like the guilds of the north in the Middle Ages, which they reproduce in a quaint Oriental form. Every now and then camels, laden with merchandize, or with panniers full of city refuse, or a donkey carrying a veiled Turkish lady like a bundle of woollen or linen clothes, pass by, and oblige the foot passengers to stand aside. On the whole, Tunis appeared to me the most strictly Oriental city I have seen, more so even than Algiers, Smyrna, or Constantinople. Perhaps this is because the foreign or Frank element is not proportionally so numerous as in any of the Eastern cities named.

The City of Tunis is five miles in circumference, and is surrounded by lofty walls. There are five gates, and thirty-five mosques, which I did not see, as "infidels" are not allowed to enter. When I was there, the weather was and had long been fine, so the town was clean; but not being paved, it is said to be ankle-deep in mud in rainy weather in winter. Altogether, it is so thoroughly Mahommedan and Eastern in its aspect, that this fact alone makes it worth visiting, especially for travellers unacquainted with Oriental life and ways.

There is no regular harbour for vessels, which have to anchor in the roads, that is in a rather exposed bay, a mile

from shore. The disembarkation has always to take place in boats, and sometimes it is difficult or dangerous, and passengers have to remain on board until the weather moderates. We were fortunate, and had no difficulty in landing on arrival at the port and village of Galetta, where we took the English railway to Tunis. We were pleased to find, as we had found before in other out-of-the-way parts of the Mediterranean, that the steam-engine and railway carriages were made in England. On the latter were the familiar words, first, second, and third class, and inside were announcements in English, side by side with the same in Arabic—a singular juxtaposition. At Tunis there is now only one foreign hotel, the Hôtel de Paris, kept by a very amiable old French ex-engineer. Finding his own business at Tunis a very poor one, he devoted some spare capital to building a new hotel. It will be quite a handsome edifice when finished, which is now far from being the case. Wonderful to say, this ex-engineer does not yet know how to charge; no doubt, however, he will soon learn this part of his business.

The morning after my arrival, May 5, I sallied forth to examine the vegetation. There is no public garden and no vegetation inside the walls, with the exception of a few Ailantus trees at the entrance gate, and some courtyard gardens of a few feet in diameter in the less crowded part of the town, near the salt-water lake. In one of these, opposite the hotel, there were Fig trees in fruit and leaf, Acacia and Ailantus, with merely terminal leaves; Almond trees in leaf and fruit, a few white Bengal Roses, some Petunias and Stocks, Bananas, naked, ragged; a Pear tree and a Cherry tree, the former in flower, the latter just forming the fruit; and some small Orange trees, from seven to ten feet high. I only saw one Palm in the town, a Phœnix dactylifera, twenty feet high, at the entrance. This little garden must have been all but leafless all winter —indeed until far into April, the trees named being all deciduous, except the Orange trees. It was very sheltered, inside the African city, and yet in any part of the more protected north Mediterranean shore, from Cannes to Pisa,

or in the sheltered valleys of Corfu, vegetation is quite as far advanced at the same date.

The two salt-water lakes, with the town between them, occupy the centre of a wide plain, limited east, west, and south by low mountain ridges. About a mile from the archway leading out of the south wall, there is a palace of the Bey's, "the Bardo," which he usually inhabits in winter. A mile further on are some gardens belonging to one of the Ministers of State; and two miles further, at Manda, are the gardens belonging to the Bey himself. I devoted an entire day to their examination (May 6).

The Bey's country palace presented, as is usual in the East, a central garden entirely surrounded by the buildings, and all but the *fac simile* of the one mentioned in the town. It contained Ailantus, Almond, Acacia, Fig, Olive, Plane, and small Orange trees. There was one handsome Araucaria excelsa, twenty feet high, and a good Palm—no flowers whatever. In winter it must be as naked as an English orchard without evergreens.

The road from Tunis to the Bardo was flanked by avenues of Acacia, Melia Azedarach in flower, Ailantus, and Mulberry, fruiting. The fields were growing bearded Corn, Barley, and Teazles, whilst in the ditches and in the fallow fields were Nettles, Plantain, variegated Thistles in great numbers, Docks, Mustard, Corn Poppies, red and white Clover, Convolvulus, Daisies, Borage, Mallow, Vetches, yellow Cornflower, or Chrysanthemum segetum, so abundant in Sardinia, with hedges of Opuntia, but not growing as luxuriantly as in Sardinia.

Outside the palace there was a rather large plantation of Walnut trees without a leaf, merely buds swelling; here and there were Elder trees in flower. The Elder grows luxuriantly in the vicinity of Tunis, sometimes as a bush, sometimes as a large tree. The Vines were in bud, but the flowers were not expanded.

The palace of the Bey was interesting in its way, principally as illustrating the progress of European ideas and habits in a thoroughly Eastern centre. The architecture presented nothing special beyond the fact that all the

windows looked out on the central courtyard, none on the country around, as is usually the case in Oriental edifices. There were many rooms furnished in a fifth-rate French style—carpets with creases and folds, not pulled over the floor, French prints in common gilded frames, such as are seen in second-rate furnished hotels all over France. One room was thus ornamented with the adventures of Byron's Don Juan, one of the last subjects I should have expected to find in a Mussulman Bey's palace. There were also some bad pictures and portraits, and an immense number of common cheap gilt French clocks and mirrors; all the clocks had stopped, not one was going. Some of the pictures seemed due to native talent, for the laws of perspective were quite ignored, and the favourite subject was the impalement of prisoners. This is an awful subject, which was awfully treated, and I really think no European artist of modern times could be guilty of painting such pictures. The poor Bey had evidently been victimized by his French agents or upholsterers; no doubt he had paid for everything I saw its weight in gold.

The gardens belonging to the Bey and to his ministers, a few miles further on, were all but completely surrounded by walls fifteen or twenty feet high, entirely so on the north side. They were principally Orange orchards, containing hundreds of healthy, bushy Orange trees, with stems one or two feet in diameter, but not rising above the level of the wall. They were planted thickly, but not so thickly as at Milis in Sardinia; each tree was allowed to develope itself. They were all covered with blossom, as is the case on the sheltered north shore of the Mediterranean at this epoch, the first week in May. There were other fruit trees in abundance—Pomegranate, Plums stoning, Pear trees with fruit just set, Cherries the same, Figs, Mulberries, a few Lemon trees; each tree had a deep saucer round it for irrigation, and there was a plentiful supply of water. The flowers were not numerous, and of the usual kinds, Bengal Roses, hybrids filling out buds, Petunia, Verbena, Abutilon, Stock. The Centifolia Rose was in bud, not in flower; Buddleia Madagascarensis going out of flower, Oleander in bud, not in flower, Cannas two feet out of ground. On

my return to Tunis I went into the vegetable market and found Broad Beans, Peas, Cauliflowers, Artichokes, Radishes in abundance; the only fruit were Oranges, Lemons, and half-ripe Loquats (Eriobotrya).

The following day I went to visit the site of Carthage, about eight miles north-east of Tunis, on an eminence overlooking the sea. We passed through a plain which might have been in England. There was nothing Oriental about it, not a Palm tree within sight; merely fields, fallow and covered with the plants already named, or planted with cereals, Teazles, and Beans—but by far the greater part was fallow. The soil seemed thin and meagre, and thoroughly exhausted by centuries of cultivation without manure. We met the Bey going to a country house he has near the sea, and which he inhabits during the summer heats; he was in a European brougham, and would have passed all but unobserved had it not been for his Oriental military escort.

The far-famed ruins of Carthage consist simply of sixteen cisterns for water, placed in juxtaposition to each other, sixty feet long, twenty-five feet wide, twenty deep, arched over, and half-full of rain-water. They have been uncovered by excavation, and are still, generally speaking, in good repair, on the rising ground. They are presumed to belong to the Roman period, not to the early Carthaginian. No doubt the ruins of old Carthage still remain buried in the half mile or mile that separates them from the sea. We had taken provisions with us, and we made an "ever to be remembered" al fresco picnic dinner under the very shadow of the ruins. We thought and talked of the past, of Marius sitting on the same spot and musing over the ruins of Carthage, and of poor Dido, whose plaintive speech to Æneas, destined to deceive her so cruelly and perfidiously, I have for many years repeated to myself—

"Non ignara mali, miseris succurrere disco."

The Bey of Tunis, a tributary of the Sublime Porte, governs a country extending over 200 miles from north to south, from the Mediterranean to the Desert, and 120

miles from west to east, from Algeria to the Mediterranean and Tripoli. The western parts and the centre of this region are mountainous, or rather hilly, the Atlas mountains gradually expiring, as it were, in this region. The sea-coast is low and marked by ridges or waves of sand. A fair amount of rain falls in winter in most years, but not always; running down the mountain sides, it gives rise to ponds, lakes, and marshes. They present the peculiarity of being salt, probably owing to the existence of salt in the soil. The two large lakes north and south of Tunis are intensely salt, and enlivened in winter by flocks of red flamingos, and by hosts of water-fowl. The Carthage water-fowl is considered a great delicacy, and we found it so. These lakes and ponds, as they partially dry in summer from evaporation, leave saline incrustations on their margins. It is no doubt owing to their saltness that they do not produce malaria either on the low or the higher grounds of Tunisia. The same fact is noticed in Sardinia, as also in Algeria, where salt lakes or *schotts* are numerous on the south-eastern base of the Atlas. Thus, Oristano, surrounded by fresh-water marshes and lakes, is decimated by fever, as we have seen, whilst Cagliari, equally, if not more, hemmed in by intensely salt lakes and marshes, is comparatively free from malarious fevers.

The central mountain or hilly regions of Tunisia are covered with Olive trees, and Olive oil is the principal product. With the exception of the Olive there is little other tree vegetation to be found; only here and there a few Pomegranates, Caroubas, Opuntias, with some scanty patches of Barley and Wheat. It appears that within the last five years 300,000*l.* worth of oil has been exported from Tunis, one-fifth direct to Great Britain, the rest to Italy and France.

From the above data it is evident that the north winds in winter reach the Tunis coast, and render its unprotected unsheltered shores as cold as, if not colder than, the protected north coast of the Riviera. Moreover these winds, crossing the Mediterranean on their way, are damp as well as cool, and a deal of rain falls. Most of the flowers I have named had been in full glory in my Mentone garden since

February, and many were quite out of flower when I left (April 11). Orange trees exist in Tunisia, but they are miles away in the interior, hidden behind sheltering walls and hedges, only to be seen even by getting inside. The Palm trees in and around the city are so few that they can be counted on the fingers. All the trees I saw being deciduous and without their leaves until April or May, the winter aspect of the country must be as bleak as that of the north of Europe in regions where evergreens are unknown.

Such is Tunis, both as regards its physical aspect, its vegetation, and its climate. Once the Orientalism of the city has been investigated and has become familiar it is a most uninviting abode—dull in fine weather, dirty in bad, ten miles away from the sea, in a dreary plain, without walks, gardens, or promenades, either inside or outside the walls. In winter cool moist north winds reign, as in Algeria, totally devoid of the bracing, tonifying character of the dry north winds which prevail in the sheltered regions of the north shore of the Mediterranean; consequently it is only suited to exceptional forms of disease.

If a mild, moist climate is really required for exceptional cases I can see no reason whatever why Tunis should be preferred to Algiers. The latter, with its numerous social resources and all the advantages of advanced European civilization, is infinitely preferable as a winter residence.

CHAPTER XVII.

ASIA MINOR—SMYRNA—EPHESUS—AIDIN—VEGETATION—CLIMATE.

THE only part of Asia Minor that I have personally explored is Smyrna and the country that extends between that city and Ephesus. My visit to these regions was paid in May, 1872, on the way from Athens to Constantinople.

The steamer passes between the island of Scio and the mainland, round a promontory directed due north, and then enters the wide, deep, and beautiful Gulf of Smyrna, taking a south-eastern course. The approach to Smyrna is exquisitely lovely on a fine summer day, such as we enjoyed. The Gulf is bounded on each side by low mountains, about 1000 or 1500 feet high, which rise gently from the shores, and thus limit it on all sides, except towards the open sea, to the north. Smyrna is situated at the south-eastern angle of the bay which the gulf forms, at the foot of a plain, which joins the hills or mountains in the background, also by a gentle rise. I and my fellow passengers, marvelling at the extreme beauty of the site, were anxious to land, connecting the name of Smyrna and its population of 150,000 with visions of Eastern magnificence, of southern fertility, and of all but tropical vegetation.

Smyrna is the most important and populous town in Asia Minor, in long. 38° 28′ N., lat. 27° 7′ E. The great security of its harbour, sheltered from all winds, and entered by the splendid Gulf, has made it a favourite commercial mart from the earliest times. It has been a great commercial centre from the early days of Greek history, and although repeatedly destroyed, or all but destroyed, by war, earthquakes, fire, or pestilence, it has always risen again from its ashes with renewed prosperity. The city ascends from the shore of the bay in the form of an amphitheatre, and

looks quite imposing as it is approached from the Gulf. I was prepared by what I had read for wide streets, fine houses, splendid quays, and Oriental magnificence, but I was miserably disappointed on landing. I found the town a mere mass of narrow lanes and of small wooden houses, huddled together—without a monument, public building, or open space to redeem it. On the shore, instead of handsome quays as described, I found merely booths, coffee sheds, barns, warehouses, on piles advancing into the water. A sea-wall was being built about thirty feet in advance of these pile-supported shanties, but for the time it only made matters worse, leaving a pool of festering sewerage between itself and the ramshackle shore houses. There were, however, many vessels quite near the shore, anchored in deep water, and the shops and bazaars were unquestionably full of goods. The hotels are very bad—worse than in the most unfrequented Continental towns.

One night I was awakened before daylight by a cry of "Fire!" The inhabitants of the hotel were evidently in great alarm, so I dressed and followed them to the top of the house, where there was a flat roof. There was, truly, a great fire about a quarter of a mile from us, and a very grand sight it was. I soon, however, got tired, and went to bed again. The next morning at breakfast I learnt that the fire was put out, but that it had been very alarming, and at one time it was feared that the entire town would be burnt. I was the only one who, in ignorance, slept through it; all the other inmates had packed up their goods and chattels, and kept ready to depart. Had there been a wind the entire town, or a great part of it, might have fallen a sacrifice to the flames, as in 1841, when more than half the town was burnt. The houses being of wood, and the streets so narrow in these Eastern cities, there is only one way to stop a fire, that is to pull down the adjoining houses, which they did successfully in this case; but with a strong wind this plan often fails.

The vegetation in and around Smyrna I soon found was all but that of the north of Europe. I asked for the Botanic Garden, or for the public gardens, but those whom I addressed did not even know what I meant. Nothing

of the kind existed. I was, however, shown a tea-garden of about ten acres, and some market gardens in the vicinity of the city. The tea-garden was evidently an old Orange orchard, behind the town, which sheltered it, and was protected by an earth-wall about eighteen feet high to the north, and by trees planted all round. The Orange trees were healthy, in bud but not in flower, mostly about fifteen or twenty years old, not reaching above the protecting wall. There were Oleanders in bud, but not in flower; in Algeria I found the Oleander filling watercourses on Mount Atlas, in full flower, on April 20. There were also Melia Azedarach, Pomegranate, in sparse flower; Robinia Pseudo Acacia, Tamarisk, Mulberry, Euonymus japonica—much grown everywhere as a bush, for protection, when protection is only required for six or ten feet from the ground, or to complete the protection given by trees. The Elderberry tree, or Sambucus racemosa, was growing in great luxuriance. I was rather surprised to find it growing all over Greece, and in Asia Minor, apparently quite at home with an intensely hot summer climate, for it is so commonly met with even in the north of England, growing and fruiting without care or protection, that it seems quite one of our own trees. There were only a few Bengal Roses, Geraniums, and Antirrhinums in this so-called garden, which was one mass of weeds two feet high, and in an undescribable state of desolation and neglect. There was a *café* in the middle, open on Sundays I was told. The other gardens I saw, belonging to Smyrna merchants, were of the same character,—enclosed with walls and planted with vegetables, principally Beans, Peas, Tomatoes, Melons, Artichokes, between the rows or squares of fruit trees; also with Orange, Pear, Pomegranate trees, cultivated for sale; Cherries still green, Pears not larger than Filberts. I saw several large Palms in good health, and no doubt more could be grown were they wanted.

There were small Fig trees in these orchards, but I looked in vain for trees giving the promise of such Figs as we get under the name of Smyrna Figs, nor did I see any on sale in the town, although there were basketfuls everywhere of the kind of Figs which are found all over the south of

Europe, dry, hard, half white figs, which we English despise and reject. I was told that the so-called Smyrna Figs were produced fifty miles more south, in the vicinity of the town of Aidin, beyond Ephesus—a much warmer and more sheltered locality.

It appears from what I learnt on the spot that the winter cold is often very severe at Smyrna, which explains the absence of southern vegetation. A few years ago the thermometer fell many degrees below the freezing point, and killed all the Olive trees. A glance at the map explains this fact; there are no sufficiently high mountains to the north, between Smyrna and the mouths of the Danube, distant only five degrees of latitude, or 500 miles, to completely shelter it from north winds descending from this region, and the Danube is frozen down to the sea every winter. There is protection, but it is not sufficient to secure immunity from cold in winter, and a southern vegetation.

The great object of curiosity and interest to all travellers who visit Smyrna is the ruins of Ephesus, the great city of former days, celebrated both as a flourishing Greek colony and as the abode of the Apostle Paul, in the early days of Christianity. They are situated forty-eight miles due south, on a new railroad opened to Aidin, a Turkish town, as stated, the centre of the Fig trade. I and my travelling friends formed a party and hired a special train for the purpose. We started at ten and reached by twelve, most comfortably, the Ephesus station near the ruins. On leaving Smyrna, we gradually ascended, passing through a plain bounded on each side by mountains several thousand feet high, until we reached an altitude of 500 feet by the barometer. We then descended a more rapid slope until we came to Ephesus, nearly on the sea level. At a few miles distance from Smyrna there were some small scattered Olive and Fig trees, the remains, no doubt, of the former plantations, with vineyards and cereals, but these ceased as we receded from the sea and reached the altitude of 400 feet. We then found ourselves on a barren plain, with merely here and there patches of ground cultivated with cereals, in the vicinity of small villages. Around these

villages, in orchards generally protected by walls, were small Fig, Almond, and Mulberry trees, and Vines; otherwise the vast plain was abandoned and desolate, more so than the plain valleys of Algeria, which it resembled. Just before we reached Ephesus, at the south base of the hill we had crossed, which sheltered the spot, we came on a grove of magnificent Fig trees, as large as seventy-year Oaks, which we were told were the beginning of the great Fig orchards. The additional protection from the north afforded by the low hill had entirely changed the climate conditions, and had enabled them to reach this splendid development.

At the station we found a sufficient number of horses, ordered beforehand, to mount our party, and started for the ruins under the direction of a guide. The very interesting ruins of Ephesus are situated on elevations which overlook a wide plain, watered by a small river that runs into the sea a few miles further on. The ground is in some places marshy, and the vegetation most rank and luxuriant. We passed through groves of the variegated Thistle, at least ten feet high, with leafless stems serried like Pine trees, and alongside Docks (Rumex obtusifolius), also ten or twelve feet high, like bushes, with immense broad leaves. It was in the midst of this rich but wild vegetation that we found the remains of the great city, dotted over an area more than four miles in circumference, the space circumscribed in former days by the town walls. The ruins are those of theatres, a circus, a magnificent gymnasium, and of many other public edifices. The site of the temple of Diana has been determined, and is being actively cleared by Mr. Wood acting as the representative of the British Museum. These ruins leave the impression of a very magnificent city, of great wealth and of a large population.

The plain in which the ruins are situated is only a few miles from the sea, and in its centre flows a small river, the Cayster. It is very lovely as seen from a hill on which some of the ruins are found, and looks as smiling and as innocent as any English valley, with its river wandering through grass fields in summer time. And yet it is entirely deserted, and as silent and lifeless as if the foot of man had

never touched the soil, although in former days, no doubt, it helped to nourish the hundreds of thousands who inhabited Ephesus.

The cause of this desertion is the deadly malaria that reigns in this region. All the way from Smyrna, a rich flourishing town of 150,000 inhabitants, we had passed through tens of thousands of acres of fertile land, capable, with labour and irrigation, of producing anything—and yet a desert. The principal cause, I was told, here too is the malaria fever, which strikes down nearly all who cultivate the soil. Dr. McCraith, the well known English physician at Smyrna, told me that no one ever slept at Ephesus without getting fever, and that two years ago 50,000 of the native inhabitants of Aidin and of the Fig districts were lying ill, incapable of work, at the time of the Fig harvest in autumn. The crop could not be gathered for want of hands, and they had to send for help to Smyrna, and to offer half the crop to those who would come and assist them to gather it. The probable cause of the excessive unhealthiness of the Ephesus plain is the difficulty its river, the Cayster, finds in discharging its waters into the Mediterranean, and their consequent overflow of the entire country near their outlet. The pestilence of malaria extends to all the low valleys of this region. I met at Smyrna an English merchant, or landowner, who has been for many years the proprietor of a prosperous liquorice factory in a valley a few miles from Aidin. The liquorice plant grows wild in these mountain and valleys, and can be had for the gathering. The extract from the root is extensively in demand, especially in Spain, for the manufacture and flavouring of tobacco. Malaria fever had been his great enemy, often disabling half his workpeople at a time; with all his precautions, he had repeatedly been ill himself, and obliged to take refuge in England. He invited me to pay him a visit, and I much regretted I had not time to do so. Here, again, was an illustration of the adventurous spirit of our countrymen, who penetrate and have penetrated everywhere, except in Sardinia, where I did not find one.

After spending four hours in the saddle, scanning this interesting spot, we returned to the station, where a very

good dinner had been prepared for us. We partook thereof with great pleasure in the open air, and then again entered our train at four, arriving at Smyrna by six. The next day I departed to continue my journey to Constantinople, with the conviction that I had *not* discovered another sanitarium for winter—that Smyrna is all very well for business, but is not calculated to afford invalids a winter retreat and asylum. This verdict may probably be applied to the whole coast of Asia Minor.

As far as can be prejudged from the data afforded by physical geography, the Gulf and Bay of Smyrna must be fair specimens—indeed, rather favourable specimens—of the climate of Asia Minor in general. Asia Minor is a mountainous country, exposed to very cold winds from all northern regions—from the Caucasian mountains to the north-east; from the cold Black Sea, into which so many frozen rivers pour their waters, to the north; from the Balkan mountains and the snow and frost-clad plains of Bulgaria and Wallachia to the north-west. No doubt, in this latitude, at the base of sheltering mountains running east and west, especially near the sea, there are nooks, valleys, undercliffs warmed by the sun; but they must be exceptions to the general tenour of winter temperatures.

Even in Palestine, which lies much more to the south, between latitude 31° and 35°, the weather is often very cold and severe in winter, although Palestine is sheltered from the north by the entire mass of Asia Minor and of its mountains. Not only is there every year frost and snow in January in the mountain regions of Lebanon, blocking up the roads and interrupting communications, but even in the plains and on the shore north polar winds bring cold and rain. The journey from Beyrout to Jerusalem and to Damascus is by no means always a pleasant journey in January and in February, owing to the presence of cold and wet brought by the north winds.

PART IV.

CHAPTER XVIII.

THE ITALIAN LAKES.

LAKES ISEO—COMO—LUGANO—MAGGIORE—THE SIMPLON PASS—THE SCOTCH LOCHS—LOCH AWE—LOCH MAREE.

"I love to sail along the Larian lake
Under the shore—tho' not, where'er he dwelt,
To visit Pliny . . . . So I sit still,
And let the boatman shift his little sail,
His sail so forked and swallow like,
Well pleased with all that comes. The morning air
Plays on my cheek how gently, flinging round
A silvery gleam . . . . ."—ROGERS' *Italy*.

EVERY year, as spring approaches, the Mentone community begins to form plans for the return home, and I am always implored by friends and patients to sanction their travelling by way of the Italian lakes and Switzerland. The desire is very natural; there is such a poetical halo about these lakes, such sublime grandeur in the great Alpine passes, that it is quite distressing to be so near and not to see them, especially when they can be brought, with ease, into the home journey.

My objections to this route were frequently met by the inquiry whether I had myself passed the Swiss mountains in spring, and as I was obliged to confess I had not, I was often thought to exaggerate the danger. I therefore determined, in April, 1864, being quite convalescent, to adopt this route on the return journey to England, and to judge for myself. I secured some agreeable companions, and was thus independent of "travelling acquaintances."

On the 8th of April, when we left Mentone, summer had thoroughly commenced on the Riviera. The spring

flowers were passing away, and those of our June had made their appearance; the days were warm and cloudless, and the nights cool and pleasant, the thermometer never descending below 50°. The mountain sides were clothed with verdure, and perfumed with wild Thyme, Rosemary, and Mountain Lavender, the Willows and Poplars were in full foliage.

On leaving Genoa and passing the protection of the Apennine chain, April 11th, a great change was observed. Although the sun was bright and the weather fine, winter still reigned in the plains of Lombardy, the trees were leafless, the hedges and ground bare. Indeed, the spring was not more advanced than it usually is in England at the same period, owing, evidently, to want of protection from the north winds. The high Swiss mountains, although running due east and west, only protect the regions immediately at their base; the north winds pass over these favoured spots to descend in full force on the plains beyond.

Nothing can be more dreary and more monotonous than the fertile plains between Genoa and Turin, once the railroad emerges from the Apennines, at this time of the year; nor was the region between Turin and Milan more favoured. These plains are perfectly flat, and are merely divided into segments by ditches or small irrigation canals, bordered with pollard Willows or Poplars, still quite devoid of foliage. Along the railway, from Turin to Milan they are principally cultivated with Rice, and the agricultural labours of spring were in full operation, part of the country being laid under water by artificial irrigation. The process appears to be, in March or April, firstly to plough the fallow land, and then to divide it into fields of from ten to twenty acres by banks of mould or clay one foot high. Water is afterwards let in, so as to thoroughly saturate the ground; it is then drawn off, the rice sown, and the field again covered with water to the depth of two or three inches. This water is constantly renewed, so as to keep it at the above height, until the grain is formed. It is then allowed to gradually sink into the ground and the crop ripens without further irrigation. The water

must be raised by artificial means, for the irrigation canals are, in most instances, considerably below the level of the fields.

The country itself appeared very prosperous; there was building going on in every village or town we passed through, and throngs of well-dressed, well-fed people, of all ranks, got in and out of the trains wherever we stopped. A little before we reached Milan we came to the station of Magenta, a name henceforth sacred in Italian history. It was here that was fought, between the French and Italians and the Austrians, the great battle, the gain of which may be said to have established Italian independence. It was difficult to believe that this calm and tranquil little village, had been, only a few years before, the scene of one of the greatest battles of the century,—that the very station we were in, situated in the thick of the fight, was taken and retaken half a dozen times, and that tens of thousands stained with their blood the verdant fields around. Near the station is seen a monumental pyramid, erected by the Italian government to the memory of the brave men who fell in the battle.

I experienced great pleasure in again seeing Milan in its new position—as one of the chief cities of a free and independent state, of "Italia Unità." I had several times visited this city in the epoch of Austrian rule, and always mourned over its dejected, enslaved appearance. In those days large bodies of fair-haired Austrians, in their white uniforms, seemed to occupy it as a foreign army would occupy a city after a siege. They were everywhere—at the gates, in the streets, in the public squares, in the cafés, in the magnificent cathedral, in the pit of the theatre; they seemed to be lords and masters, and to know it, whilst the poor Italians appeared humbled and dispirited. Often I could observe a scowl of hatred flash over their face as their northern conquerors swaggered past, their swords clanking on the pavement. I cannot understand any one being twenty-four hours at Milan or at Venice, in those days, without feeling an ardent sympathy for the oppressed Italians,—an ardent desire to see their northern masters obliged to recross the Alps.

Now the state of things is altogether different; there are no more foreign soldiers to be seen, and the warriors who are visible wear the national uniform. The streets are thronged with happy, contented faces, and the evidences of individual prosperity, and of active healthy municipal life, are met with on every side. The city is being quite transformed; new streets of fine houses are being built in the suburbs, public buildings are being renovated, and plans are being matured, which, if effectually carried out, as no doubt they will be, must make Milan a truly splendid city. Among these is one for clearing the vicinity of the grand cathedral of a host of inferior dwellings, and for erecting a range of first-class mansions, in unison with this noble structure, one of the finest specimens of Gothic architecture in the world. The cathedral is indeed worthy of every effort being made to bring its proportions into view; it is inexpressibly majestic, both internally and externally, worthy of a great and free nation, and deserving of a special visit to Italy.

On looking round and witnessing these evidences of renewed national life, I could not but regret that the poet, Samuel Rogers, did not live to see the fulfilment of his singular prophecy contained in the noble lines, reproduced at the head of the eighth chapter, page 207. His heart would indeed have warmed to see the country which he loved with such deep and sincere affection rise from "the dust," shake off its chain, drive away the eagle "cowering over his prey," and, for "the third time," reassume its rank among nations. Most truly and prophetically did he say, "AND SHALT AGAIN."

The weather was beautiful while we were at Milan, but we were told that the favourable change had been quite recent, and that a few days before there had been a fall of snow. After devoting a day to the city, its cathedral and the improvements, we again took the rail, the line from Milan to Venice, bound for Lake Iseo. At Palazzolo, the second station beyond Bergamo, we alighted, took a local conveyance, and were soon at the "Albergo del Leone," Iseo, the distance being about eleven miles.

The Italian lakes—Garda, Iseo, Como, Lugano, Mag-

giore, and Orta—occupy deep basins or depressions at the southern base of the Alps, as the Swiss lakes occupy similar depressions at the foot of the Alps to the north. The principal difference is that the south side of the Alps is much more precipitous than the north, so that the Italian lakes lie on a line, immediately at their base, whereas the Swiss lakes are at the extremity of valleys, which extend some distance from the great mountains. In both cases these lakes are formed by rivers that descend south and north from the snow and glacier-covered mountains, and from all of them great rivers depart, carrying away their overflow. According to the most recent geological views, these lakes, even where one or two thousand feet deep, have been scooped out, in former geological epochs, by glaciers descending along the valleys at the termination of which they lie.

The longitudinal valleys, lying due north and south, in which the Italian lakes are situated, are not only protected from the north by the higher Alps, but also from the north-east by descending spurs that occupy their eastern shores, and from the north-west by the Alps of Savoy, which take a south-westerly course.

This peculiar protection from all north winds gives them a totally different climate to that of the plains of Piedmont and Lombardy, which we had just left. It seemed as if we had repassed the Apennines, and had once more reached the Riviera and summer. For some miles before we arrived at Iseo the vegetation was again that of June, and the gardens were full of early summer flowers; the Hazel, the Willow, the Poplar were in full foliage, the Fig trees were in leaf, and the Vines had made shoots several feet long.

Lake Iseo is a small, picturesque lake, but little frequented as compared with its larger neighbours, Garda, Como, and Maggiore. It is about fourteen miles long, and from two to three broad, and lies immediately at the foot of the Alps, to the north-east of the town of Bergamo, and to the west of Garda, the largest of the Italian lakes.

The town of Iseo is a mere large Italian village on the borders of the lake, and the "Albergo del Leone" is a very

unpretending establishment. The rooms, however, which are tolerably clean and comfortable, immediately overlook the lake, the scenery of which, as viewed from the inn, or, indeed, from any point, is exquisitely beautiful. From the shores rise, more or less abruptly, mountains several thousand feet high, which, at the northern extremity, rapidly merge into the snow-clad summits of the high Alps. This lake, indeed, struck me as peculiarly lovely, quite as much so as its better-known companions; it is perfectly embosomed in mountains, which in one region rise all but abruptly from the deep waters, whilst in another they slope more gradually, presenting on their sides luxuriant groves, smiling vineyards, verdant pasturage, and numerous villages.

These villages—white, clean, and picturesque at a distance, whatever they may be when seen closely—dot the hill-side at every mile or half-mile, wherever the slope is not too great to prevent cultivation. Evidently the southern sun enables their inhabitants to extract the elements of life—corn, wine, and oil—from the very rock itself. Thus, the mountains, which in our climate would only support a few sheep and cattle, in this favoured region maintain a teeming population. It is the same at all the Italian lakes; wherever the mountain is not perpendicular, there are villages on the mountain-side, with their white-turreted churches, every half-mile. There they lie, basking in the sun as it were, nearly all the year round, little knowing the privations and hardships that are endured by their fellow-mountaineers, living on the north side of the mountains that limit the horizon, only a few miles distant.

The charm of Lake Iseo, in my eyes, consists in its not being such a sea of waters as the larger lakes, Garda and Maggiore. It resembles one end of Lake Como, and has the some kind of beauty, that of a fine expanse of water, the opposite shores of which are easily discernible, although reaching north and south as far as the eye can penetrate. Then there is a peculiar fascination about these southern but yet Alpine waters; the sky is pure and blue in fine weather, such as we had all but invariably, and the air is

fresh and clear, much more so than it is with us on our finest summer days. Thus all objects in nature stand out distinctly on the horizon, and the most distant mountains are seen with the naked eye almost as well as with a telescope.

The scene was truly enchanting as we sat on a small terrace in front of our inn, against which the tiny wavelets broke with a gentle rippling sound. Before us was the clear lake, studded with little fishing-boats and with large market and ferry-boats crossing from Pretore, on the opposite side. Beyond the lake was the mountain, its flanks dotted with white villages, whilst between, at a distance of some two miles, a large island rose boldly a couple of hundred feet above the surface of the waters.

In the afternoon we took a boat, and were gently rowed to this island. On landing at a little pier we found ourselves in the midst of a fishing village, one of the prettiest and most picturesque I ever saw; it was the most charming combination possible of the Alpine, fishing, and Italian village. Quaint gabled cottages, picturesque costumes, nets hanging to dry from every house, black-eyed, black-haired maidens, chubby, rosy, half-naked children, old wrinkled women with their distaffs, like the Fates of the heathen mythology, and fine old men with flowing white locks, the Nestors of the village. We were evidently a source of great curiosity to them, for they all came out of their houses, and stood in a line looking at us; the village had only one row of houses along the shore of the lake. Young maidens smiled and laughed and smiled again, the elders looked demure but inquisitive, whilst the children, as usual, followed in a group. They were clearly desirous to get a good view of the strangers, whose advent produced quite a sensation.

At the end of the village we found rich undulating meadows on the margin of the lake, the northern end of the island. The grass was knee deep, and enamelled with innumerable flowers—Primroses, Violets, Hepaticas, Buttercups, and a hundred others. The Mulberry trees were in leaf, and the Vines trailing from tree to tree were beginning to be covered with foliage, and to assume a

grace which they have not when leafless. We were sorry to depart, but the afternoon was on the wane, and we were obliged to leave the "lonely isle" in the midst of Lake Iseo.

We soon got into the way of lounging on the waters, than which nothing can be more delightful, especially when surrounded by grand and beautiful scenery. It is certainly the height of idle enjoyment to sit or lie comfortably in a boat, gently impelled over the water in the midst of a magnificent landscape illuminated by the glory of the southern sun. Nor can anything be devised more conducive to health for an invalid; it is exercise without fatigue, and enjoyment without exertion, combined with pure air and sunshine. Time glides away imperceptibly, especially if the excursion is shared with two or three agreeable companions, home is reached with a good appetite, and a sound night's rest generally follows.

Having explored the part of the lake near Iseo, we determined to make an excursion to Lovere, a town at the head of the lake, some ten miles distant, and started after breakfast in a large boat rowed by two men. Our course was prosperous, and we were entranced with the increasing beauty of the shores of the lake and of the mountains by which they are limited, as we approached the upper extremity. On rounding a promontory, we found ourselves in a kind of secondary circular lake, about eight miles in circumference, at the bottom of which is Lovere. This little town is known in English literature as having been long the residence of Lady Mary Montagu, who gives a very glowing description of it in her correspondence; it is prettily situated and clean, but not otherwise remarkable. We were shown to an inn, the "Canone d'Oro," evidently the country palace of some Milanese nobleman in former days. There was a large interior courtyard, with peristyle and arcades, and grand frescoes on the walls representing all sorts of people and things. The rooms were vast in size, ornamented with half-effaced carvings and gilding, and the beds were "such beds!" what they call in northern Italy "letti matrimoniali." We might call them family beds, for

they are at least twelve feet wide, and are certainly large enough for an entire family, father, mother, and children. They are only met with now in very old inns, in out-of-the-way places such as Lovere.

In my youth I was an enthusiastic fisherman, and a little of the old feeling still remains, so in leaving for the Italian lakes I had put a couple of rods in my portmanteau, intending to depopulate their waters. I had repeatedly tried my hand since our arrival at Iseo, but all my Scotch lore appeared lost on its finny inhabitants; I could not get a rise or a bite. It will, therefore, be easily imagined that I was much gratified to find that there was at our hostel an English gentleman who had been residing there for nearly two years, solely for fishing and shooting. I at once sent in my card, asking for an interview; this was granted, and an invitation to go out fishing the next morning at six was eagerly accepted. I was punctual to the appointment, and we spent several hours together.

My new acquaintance was fishing for a very large kind of bull trout, from ten to twenty pounds in weight, which inhabits the deep waters of the Italian lakes, and gave me much interesting information respecting it and fishing in general in this part of the world.

These monster trout have been known to exist from time immemorial by the local fishermen, but were considered to be all but inattackable until, a few years ago, an English gentleman taught the fishermen of Lake Garda how to catch them. In summer, when they are spawning, they are occasionally seen in shallow waters, but they then refuse to take any kind of bait, and in winter, when they are disposed to feed, they live in the deepest waters of these lakes, which are from one to two thousand feet deep. The depth of Lake Iseo is nine hundred, that of Garda one thousand nine hundred feet.

My Lovere companion was fishing in the following manner:—The boat, a flat-bottomed one, was rowed by two men; the line, of stout whipcord, was about three hundred yards in length. Four hundred feet were leaded at every ten feet, the terminal lead being heavier than the rest; a few feet from the bottom was a side line, about

twenty feet long, and similar side lines were attached at the first, second, and third hundred feet. These were baited with a small fish like a herring, abundant in the Lombard lakes, and called the fresh-water herring. The entire line was cautiously thrown into the lake, until about five hundred feet were immersed, so that the first bait was two hundred feet below the surface, the second three, the third four, and the fourth five hundred feet. The line itself was wound on a large winch or reel, fastened to a small framework, about two feet above the side of the boat. Once the line thrown over, the boatmen rowed us gently about.

This time, also, our efforts, although directed by a skilled hand, proved ineffectual; but I did not regret the early rising, for the morning air was pure and fresh, and the lake was quite calm, as smooth as glass, and inexpressibly lovely, with its frame of grand Alpine mountains. There were other boats out on the same errand as ourselves, gently skimming the surface of the lake. My companion told me that if a boat, manned like ours, caught two, three, or four fish in a week's fishing, it was considered very good sport, and paid the fishermen. The large trout are much sought after in the great cities—Milan, Bergamo, Brescia—for ceremonial dinners, and sell at the rate of two or three francs a pound, the price paid to the fisherman being at least one franc. Thus, three fish, on an average, in the week, weighing from thirty to forty pounds, would make fifteen or twenty francs each for the two fishermen, more than they could get in winter by agricultural labour. My companion had been fishing all winter, and had marked on a gaff, as a tally, a notch for each victim; I counted forty-seven. When he did not fish he employed his time in shooting wild fowl at the mouth and on the banks of the neighbouring river. He was the only Englishman within thirty miles round, and his solitary sporting existence was a source of great surprise to the Italian population; he was another type of the roving Englishman.

In winter this deep fishing can be carried on all day, but in the fine, sunny weather of early spring and summer

the only time when there is a chance of catching fish is the first and last few hours of daylight. It is the same with us, there is nothing whatever to be done in the fishing way on a fine, warm, sunny, cloudless summer day. This fact alone renders it quite useless for invalids to visit the Italian lakes in spring or summer for fishing; to have any chance whatever of success, they would have to commence operations by four or five o'clock in the morning, and to stay out until dark in the evening, remaining idle all day, from 8 A.M. to 6 P.M. Such a kind of life is only fit for strong, healthy men.

Although there is an amazing quantity of fish in these lakes, the fishermen told me that there was no success to be expected in angling in April and May, as the fish were spawning. Later in the season fish are to be taken with rod and line, but even then only between four and seven in the morning and six and eight in the evening; in winter all the large fish take to the deep waters.

For want of legitimate sport, when on Lake Como, we were reduced to a well-known poaching manœuvre. I attached sixty flies to a line one hundred and twenty feet long, and carried it along the surface of the water between two boats. In this way we managed to catch a certain number of fish, averaging from half a pound to a pound and a half in weight, a kind of chub. They rose tolerably well, and I was told that a month later they would take the fly still more eagerly. Although it may be difficult in summer to catch fish by angling in the Italian lakes, owing to the intensity of the light and to the glare of the sun, it is certain that they must be teeming with the finny tribe, from the numerous fishing villages, fishermen, fishing-boats, and fishing-nets that are seen on the shores.

Lake fishing is pursued under much more favourable conditions in Scotland. The cloudy sky and occasional showers which are the rule in "ultima Thule," even in midsummer, are propitious to piscatorial enterprise. Moreover, fishing can generally be undertaken and carried on in the daytime, between breakfast and dinner, without fear of the fish being driven to the bottom of the lochs by the glare of the sun. The plan I generally adopt in Scot-

land is to breakfast at half-past eight and to start at nine. I hire a good-sized boat, rowed by two men, who prepare the tackle whilst I am at breakfast, so that I can begin fishing without loss of time on starting. The boat is rowed gently, at the rate of about two miles an hour, and at about a quarter of a mile's distance from the shore, usually the best fishing ground. I troll with three rods, one with a spoon and heavy tackle at the stern of the boat in deep water for large fish, the other two rods at right angles to the boat, right and left, one with flies on the surface, the other with a fresh or artificial bait a few feet below the surface. The reels are placed so as to be clear of all obstruction, in order that the line may run freely at the slightest touch. All thus prepared, I and my companions arrange ourselves comfortably on cloaks and rugs at the bottom of the boat, and what with conversation, the observation of nature, and books, the time passes pleasantly and rapidly.

If a fish strikes one of the lines the reel gives a "whirr," and by the rapidity with which the line runs out the size of the fish may be pretty well judged. Instantly the book is thrown down, the rod is snatched up, and then begins the tug of war, often ending in the capture of a red and silver speckled denizen of the deep, a fine loch or sea trout, not only lovely to look at, but promising an agreeable addition to the day's dinner or to the next morning's breakfast. In a country where mutton—first-rate mountain mutton it must be allowed—is the all but invariable fare, for there is little else to be obtained in out-of-the-way places in Scotland, such an addition is most acceptable. In some of the larger Scotch lakes, such as Loch Awe, there is a large trout, called the bull trout, or Salmo ferox, very similar to the large trout of the Italian lakes. When caught by the spoon, the bait it takes most readily, it affords splendid sport, running out a hundred yards of line at the first start, and taking one or two hours to kill.

At one, the boat is stopped for lunch at some pretty islet, or on some picturesque point of the shore; by that time about eight miles of the shore have been leisurely passed. Half an hour or an hour are spent, lying on the

sweet heather, eating and chatting, or exploring the rocks and woodland. These wild spots on the Scotch lochs, far away from the haunts of man, are most fascinating in July and August. The grass is enamelled with flowers, Ferns grow out of every stony crevice, and thick green velvety Moss clothes the north side of the trunks of trees, covers stones near the beach, at the foot of the mountains, and on rocky mountains' sides, wherever water is trickling down. At the margin of the lake, in low places, are hosts of bog plants, and amongst them the pretty Grass of Parnassus, with its delicate cream-coloured flowers; here they can be gathered and examined without fear of "malaria." The boatmen sit a little apart, eat their oatcakes and drink the mountain dew dealt out to them—a never-to-be-omitted ceremony on these occasions. Thus refreshed and renovated, the boat is regained, and if the loch is a narrow one, like Loch Awe, it is crossed, the rods and tackle carefully visited, the flies or bait changed if necessary, and the progress homewards commenced in the same way as in the morning.

If the fish "rise," the three rods give plenty of occupation, and there is very little time for reading, or even for conversation, beyond the expression of fear, hope, anxiety, pleasure, delight or vexation, according as the finny prize is secured or lost. If not, the boat glides smoothly on, sufficiently near the shore for every tree, every shrub, every heron standing quietly in the water watching for its prey, to be distinctly seen. The outline of the mountains, purple with heather in full blossom, the mists that gather along their sides, the clouds that form, break, and re-form in the sky—all are the objects of attention, often the subject of remark. Occasionally a "Scotch mist" descends and breaks overhead as a brisk shower. For this we are quite prepared, and huddle together under cloaks and umbrellas, half-vexed, half-pleased, for the fish rise better after rain. The shower over, we emerge from under cover, like birds from under the foliage of an oak tree, and the wraps are dried in the sun, which generally shines forth after the rain. If a good-sized fish takes the bait whilst it is raining fast, there is a regular com-

motion. It will not do to lose him, and yet the necessary operations can only be carried on by despising all shelter and disturbing the snugness of the bad-weather arrangements, at which the ladies all but invariably complain.

Things do not always go on smoothly; little accidents and adventures occur, perhaps rather disagreeable at the time, but a source of merriment afterwards. A storm and adverse wind may rise when the boat is miles from home; the waves may run so high, and the wind be so strong, even on these Highland lochs, that the vigorous rowers prove all but powerless to urge on the boat. We have then to land, fortunate if we can find a road, a farmhouse, and a cart with some straw at the bottom, in which to make our way home. Sometimes there is no regular road, no house, and the margin of the lake has to be skirted as best possible. On one occasion, on landing for the midday rest, I fell right into the loch up to the neck, but fortunately there were some charcoal-burners near, with a rude tent. I had to ensconce myself therein, amidst the laughter of my companions, whilst my clothes were dried, receiving no commiseration from any one. Only three or four can manage comfortably in one boat, but two or three boats can join, start at half an hour's interval, meeting at the same place for the midday rest.

After a day thus passed on the waters it is very seldom that a good appetite is not brought back, and that a good night's rest is not subsequently obtained. There has been no fatigue, no excitement, and yet the entire day has been passed in the open air, in communion with an ever-beautiful nature. My taste for fishing first led me to try this life when I seriously broke down in health, and no plan that I have ever since adopted for the improvement of health has been half so beneficial. To my surprise, neither I nor those with me ever catch cold, although thus living on the water exposed to frequent showers of rain. It was this circumstance that first opened my eyes to the fact that colds are seldom caught when the thermometer is between 55° and 65° Fah., whether it rains or not, as explained in a previous chapter.

There are very few Scotch lochs where a settlement, such

as I have described above, may not be made, for there are comfortable little Highland inns on all of them. My favourites, however, are Loch Awe in Argyleshire, and Loch Maree in Ross-shire. Both are long and narrow, which renders it possible to fish both sides the same day, and both are in the midst of the most wild and beautiful scenery. In his way, Ben Cruachan, on the north shore of Loch Awe, three thousand feet high, is all but equal to any of the mountains which embosom the Italian lakes; his beauty, however, is of a different kind—it is stern, severe, Ossianic. Rising as he does, at the head of his loch, he is ever before you, sombre and majestic. There are several little shooting and fishing inns on or near Loch Awe—at Dalmally, Cladich, and Port-Sonachan.

Loch Maree is much further north and more difficult to reach, but it is better stored with fish, and especially with sea-trout. Loch Awe is by no means as well supplied with trout as it was some years ago, owing partly to the casual and unfortunate introduction of pike into the lake. This tyrant or shark of fresh waters was unknown until about twenty years ago, when several were thoughtlessly placed into a small pond or tarn far away in the mountains, the overflow of which runs into Loch Awe. The young pike soon found their way down the tributary, took complete possession of the loch, and have greatly damaged the trout and salmon fishery. Moreover, a steamer has recently been introduced on the loch. It is a boon to tourists, but steamers seem to exercise an unfavourable influence in lakes, at least as far as the fish are concerned. Pike are fortunately still unknown in Loch Maree. There is a little inn at the lower or southern extremity of this loch, called Kinloch Ewe, which is comfortable, but a mile and a half from the head waters—rather a drawback. The scenery is even sterner, wilder, and grander than at Loch Awe, always excepting my favourite Ben Cruachan.

At the head of Loch Awe there are a number of very picturesque islets, celebrated in the Highland traditions. On one of these islands called Inishail, or the Beautiful Isle, are still seen the ruins of a nunnery of the Cistercian order. Even in these wild northern regions the monks and nuns

of old seem to have shown their usual love of the beautiful in nature. I have often thought, when looking on the ivy-clad ruins of their former abodes, that in the barbarous, savage days over which we so love to cast a kind of false romance or glamour, sensitive, poetical, studious natures must have often been positively driven to the cloister to escape contact with the rude beings who surrounded them. Certainly the monks of old have shown that thorough appreciation of the beauties of nature which in our own times is specially the attribute of intellectual, cultivated minds.

Another of these islands was the burial-place of one of the neighbouring Highland clans. An English artist recently lived for nearly two years on one of the largest, in a kind of log cabin or moveable house, which he brought with him. He wished to study nature in her various moods, angry and smiling; to analyse wind, cloud, and storm, sunshine and zephyr, with a view to improvement in his art. He has written a pleasing book of poems on the isles of Loch Awe, and also a very interesting work descriptive of the loch, and of his studies thereat, entitled "A Painter's Camp in the Highlands."

The mention of my favourite pastime has carried me far away from sunny Italy and from its smiling lakes, into the wild and sombre country of Ossian; I must return to beautiful Iseo. After breakfast we started from Lovere for home, but were soon deservedly punished for despising local knowledge. Our boatmen told us the night before that we ought to leave at seven o'clock in the morning in order to reach Iseo before the "aura" arose. The *aura*, or slight breeze, is a wind that commences daily in summer about ten or eleven, in the south of the lake, and blows upwards to the north, that is, from the plains towards the mountains; it is the representative of the daily sea-breeze on the coast. The mountains being warmed by the sun's rays, heat the air in contact with them; it rises to higher atmospheric regions, a vacuum is formed, and cooler air rushes in from the plains of Lombardy to supply its place. The warmer the weather the more decided the aura or south breeze; at night, on the contrary, there is a down-draught from the

mountains. These winds render the navigation of the lakes easy; the boats and barges descend from north to south at night with the north land or mountain breeze, and ascend in the daytime with the aura or south breeze.

We thought that by taking an extra rower we should meet the emergency of the case, but we were mistaken. We proceeded merrily, the lake all but calm, for the first hour, but about eleven o'clock, on rounding a promontory, we saw a mile ahead of us a swell rapidly advancing; it was the aura. It soon reached us, progress became laborious, and some of our party began to feel uneasy. We therefore landed at a populous village,—there are such villages every few miles along the shore,—obtained a local conveyance, and left the boat to its fate.

A week passed rapidly at our pretty lake-side abode, most of the day being spent on the water, with benefit to mind and body, and then we departed—not without regret—for Bellaggio, on Lake Como. Bellaggio is easily reached, by rail to Lecco on one arm of the lake, and by steamer or private carriage from thence. This pretty village thoroughly deserves its Italian name, "beautiful residence." It is situated on a promontory that juts out into the middle of the lake, where the three arms or divisions meet, commands them all, and is one of the most enjoyable positions on Lake Como. There are several good hotels, and the one at which we stayed, the Grande Bretagne, is a most comfortable and agreeable residence. The terraced garden in front descends down to the lake, and the views are truly splendid in every direction, mountain and sky blending everywhere in glorious harmony, with all the southern characteristics described when speaking of Iseo.

Life at Lake Como is essentially "Lacustrine," if I may venture on so scientific a term, by which is meant that it is spent on the water, as at Venice. All excursions are made, all the palaces and gardens are reached by water; so that the gondola or boat becomes, as it were, a part of one's existence. For my own part, not only did I join my friends in all their promenades and excursions, but when at home, in early morn and until late at eve, I made it—the lake—my abode. In leisure moments, and all were leisure moments

in these happy days, instead of lying on a cloak on the grass, musing, reading, or looking at the clouds, as at Mentone, I used to take a little skiff, with a pretty fringed, red and blue striped awning, and with or without a companion, I rowed into the lake, a mile or two from the shore. Then I laid down the oars, and, alone in the little world of waters, lying at the bottom of the boat, surrounded by all that is most lovely in nature, fanned by the real zephyr of the old Roman poets, I mused or read until social obligations obliged me to take up the oars and to return to the real but "flowery" life at the hotel.

There are various palaces to see on the shores of the lake, which are principally of value as giving a motive for excursions. Pliny's villa would be very interesting if it could be shown, but although he had several on the shores of the Larian lake, "Hujus in littore plures villæ meæ," Epist. ix., the memory even of their site has not survived.

The gardens of these palaces are much more interesting than the palaces, for they are full of very beautiful flowers, which give positive evidence of a mild climate, of mild winters, and of early springs. The principal feature in them, April 20th, was the luxuriance and great size of the Camellias, Azaleas, and Magnolias. The Camellias were growing in the open ground as bushes or small trees, from twenty to thirty feet high, covered with tens of thousands of white and yellow flowers; the Magnolias were quite forest trees, like middle-sized oaks, and were white with huge blossoms. All our early summer flowers were in bloom and growing luxuriantly. There were Lemon trees planted, espalier fashion, in the open, but then they are covered up with mats all winter, and these mats had only been recently taken off, so that they looked very meagre and straggling.

The recollection of my residence at Bellaggio, although so enjoyable in every respect, is saddened by an event which painfully reproduced former Naples experience. In the same hotel were an American gentleman and three young daughters. They came from Como on the same steamer as ourselves, one day that we had been there for an excursion, and I noticed on board that one of the young

ladies appeared to have a bad headache, and to be too ill to enjoy the scenery. The next day I was consulted by her father, and found to my deep regret that she presented all the symptoms of severe typhoid fever in its early stage. The family had spent part of the winter at Naples, and had only left it a few days previously. I did what I could for my young patient, a charming girl of nineteen, whilst I remained, and placed her in the best medical hands I could find when I left. She was very ill, but I thought her youth, medical treatment, and the pure air in which she was, would triumph over the disease. It was not to be, however, her young days were numbered, and I subsequently heard that after our departure she got rapidly worse, and died in a few days. The poor girl was fatally poisoned by the deadly emanations of fair Naples, and only left it to droop and die. Most truly might it be said in her case, and in similar ones, "vedere Napoli, e poi morire."

From Como we went to Lugano, staying there a couple of days. The impressions of former visits were revived, and they are not favourable to Lugano; it has always struck me that this lake and its town have a cold, sombre, northern look. There is not about it the smiling grace or southern sunniness of Como, Maggiore, Iseo. From thence we took a carriage to Lake Como, and the steamer across to Baveno, where we again settled down. Lake Maggiore has all the charm of Como, but it is on a larger, vaster, wider scale, and the mountains that surround its southern shores are lower, less Alpine. The Borromeo islands, situated about a mile from the beach, near our abode, are interesting and picturesque, but do not certainly deserve their great reputation. The palace is second-rate, and the gardens are stiff and formal.

From Baveno we made an excursion to Lake Orta, a lovely little lake embosomed in the mountains, rather like the upper extremity of Lake Iseo, with a pretty town, opposite a picturesque, house and garden-covered, islet, at the southern end of the lake. We made also various excursions in the vicinity, with great joy and delight. Nature was everywhere glowing with extreme luxuriance,

all the trees were in full foliage, the meadows were up to the knees in grass, and the early summer flowers were strewn over the fields in wild profusion. Indeed, the earth was enamelled with flowers, and the rocks were fringed with ferns. Groves of the Osmunda regalis were growing on the roadside, and we were constantly stopping the carriage in childish delight, to climb up the high banks and secure new floral treasures.

But all delights must have a term, and the day at last arrived when we had also to say adieu to Lake Maggiore, and to prepare for the great undertaking, the passage over the Alps by the Simplon.

We had engaged a commodious vetturino carriage, with four horses, and started on one morning, the 4th of May, for Iselle, a village inn four hours from the summit, on the south or Italian side. The weather was beautiful when we left Baveno, and continued fine until we reached Iselle, where we found a good dinner and comfortable beds. The road from Baveno is very picturesque all the way, and the little inn of Iselle is placed in a most romantic situation, on one side of an Alpine cleft or valley, between stupendous mountains, with a brawling river in front, on the other side of the road, hurrying its foaming waters over large rocks and boulders, and frantically jumping over every obstacle and impediment; we went to sleep that night to its lullaby.

The next morning we were up and off betimes. It was raining, and from the moment of our departure the weather got worse and worse; in an hour we reached the snow, and the rain changed to sleet. Then came cloud or mist, which only at times allowed us to catch a glimpse of the majestic scenes we were passing through, of the boisterous torrents, the riven rocks, the bleak snow-covered mountains, the fir trees, some laden with snow, bending under their burden, others dead, showing merely bare blasted trunks adhering to the mountain side. When we reached the summit, near the hospital, at midday, we were out of the rain, sleet, snow and fog, and the sky was clear and blue; but we were in Siberia, in midwinter. The ground was hidden in a winding-sheet of snow, and the road had

been cut through it to a depth of many feet; in some places the wall of snow on each side reached much above the carriage. On descending, on the north side, we passed through numerous arcades or galleries, built to protect travellers from avalanches. Here we found sheets of ice underneath, above, on every side, gigantic, ridiculous icicles, ten or fifteen feet long, and as thick as the trunk of a good-sized tree; we were indeed in the kingdom of frost. I was delighted with all I saw, for during the winters passed in sunny Mentone, I had all but forgotten the look of snow and ice; but it was bitterly cold, although we were in the inside of a commodious carriage, well wrapped up in cloaks. Two or three hours' descent, however, brought us out of winterly weather, and we then found the sun shining nearly as brightly, and the weather nearly as fine as on the south side of the Alps. By six o'clock we were comfortably settled at Brigg, in the valley of the Rhone, and our excursion to the Italian lakes was over.

The three weeks so delightfully passed on Lakes Iseo, Como, and Maggiore cleared up all previous doubts as to the spring climate of this part of Italy. Unless the weather whilst I was there was altogether exceptional, and I was told that it was not, invalids may safely make it their residence from the end of April until the end of May or June, passing from one lake to the other as we did. Lake Garda, the largest of all, is placed in the same geographical conditions, and is equally sheltered and sun-favoured, especially the upper or northern extremity, which is more immediately protected by the high Alps; its shores are equally lovely.

During our three weeks' tour we had rain only once, at Iseo. Then it was heavy, and lasted twenty-four hours, with a southerly wind, but the thermometer, previously always about 64° indoors, only went down to 60°. I was told that very often there is a great deal of rain in April, but that it is never cold rain. I presume it usually comes with south winds, as was the case when we were there, and if so it can do no harm, even to those suffering from chest affections. It is well, however, that travellers who intend spending a few weeks on these lakes in the spring should

previously know that in some years rain thus falls, in April and in the early part of May, frequently and continuously; they must, therefore, make up their minds to run the risk. If it does not rain at this time of the year, the weather is really heavenly; the air is pure, fresh, cool, clear, soft, and the sky is blue, with fleecy clouds sailing over it, or lying in white masses on the high Alps. The sun shines brightly but not too fiercely, whilst the higher mountains are still covered with snow, the emblem of departing winter, snow so brilliantly white that it fatigues the eye to look upon it for any length of time. In such an atmosphere, among such beautiful scenery, mere existence is an intense pleasure.

The passage over the Simplon at the end of the first week in May, in an exceptionally favourable season, has, at the same time, entirely dispelled any doubts I may have had as to the advisability of chest sufferers returning to the north of Europe in spring over any of the Alpine passes; it is simply folly even to contemplate it. To pass through such a scene of wintry desolation as I have faintly traced, to remain from six to eight hours in cold rain, sleet, fog, mist, snow, and ice, is an unpardonable imprudence for such persons; it is risking all the benefit gained by the sacrifices and care of the previous six months. Bronchitis, pleurisy, pneumonia, a break up of diseased lung tissue, and a renewal of arrested disease, may be the result. Chest invalids who visit the Italian lakes must either remain there until the middle of June, until the summer has cleared the high mountains from snow, and until fine clear Alpine weather has set in, or they must return to the north by Turin and the Mount Cenis tunnel, now completed and open. The Mount Cenis tunnel is so well ventilated, owing to there being a difference of level of nearly three hundred feet between the entrance and the exit, that no fear need be entertained even by an invalid. The only drawback is that foreigners insist on closing the windows, and as the passage takes thirty minutes, suffocation is apt to come on for want of respirable air. In reality they may be open, two or three inches on each side, without any risk whatever, indeed with positive and decided advantage.

The next day we left Brigg, descended the valley of the

Rhone, skirted the Lake of Geneva, and reached the town of that name. Geneva, like Paris and Marseilles, is being all but rebuilt, transformed. We found that spring had also commenced along the verdant shores of the lake, but not the spring we had left on the Italian side of the Alps. It was evidently still rather too early a period of the year, May 6th, to be quite safe as a residence for chest invalids who have spent the winter in the south.

Sometimes the Swiss lake valleys are verdant, mild, and spring-like at this epoch, early in May. Fine, mild spring weather, however, can no more be depended upon, for a continuance, thus early in Switzerland, than it can in our own more northern climate. If the wind turns to the north the weather may become cold and bleak in the second or third week of May, or even later, as I have personally experienced.

The Swiss themselves are aware of this meteorological fact, and the Swiss families that spend the winter in the South never think of returning until the middle of May.

It is a pity that the uncertain character of the Swiss climate in early spring is not more generally recognised. So far from such being the case it seems to be the general impression that by the middle of April summer has arrived at Vevay, Montreux, and other similar places on the Swiss lakes. Hence thousands of winter emigrants, especially Germans, every year, leave the sheltered Riviera in April to settle on the Lake of Geneva, and often pay dearly for their error.

This mistake is founded on the erroneous idea, very generally entertained in the north of Europe, that the Lake of Geneva has a very mild, even warm, climate in winter, and especially Montreux, on the north shore. Compared with central and northern Europe, where rivers are deeply frozen, and where snow lies on the ground for many months every year, the north shores of the Lake Leman are certainly sunny and mild. But this mildness becomes real winter if compared with the Mediterranean Riviera, the undercliff of Europe. Nor can it be otherwise when we think that this lake and its most sheltered and protected nooks, are surrounded, in winter, for many months with ice and snow on every side.

CHAPTER XIX.

BIARRITZ AND ARCACHON.

"Loud roared the dreadful thunder,
The rain a deluge showers,
The clouds were rent asunder,
By lightning's vivid powers,
The night both drear and dark.
Our poor deluded bark,
Till next day, there she lay.
In the Bay of Biscay."—*Old Song.*

BIARRITZ AS AN AUTUMN AND WINTER RESIDENCE—SITUATION—CLIMATE—SEA BATHING—THE IMPERIAL RESIDENCE—ARCACHON.

I HAVE repeatedly visited Biarritz as a tourist, and in the year 1857 spent a very pleasant month on its shores (that of September), in order to enjoy the excellent sea-bathing. From that time forward I have often sent patients and friends to Biarritz, that they might benefit in autumn by the sea-bathing, and in winter by the climate—a decidedly mild one as compared with our own.

Living at Biarritz is less expensive, it would appear, in winter, than in most of the southern sanitaria, a fact which makes it a valuable addition to our health "harbours of refuge." It is this fact that induced me to devote a chapter to Biarritz in the second edition of this work in 1862, drawing the attention of the profession to its capabilities and value; since then it has advanced considerably. I was there in the spring of the year 1869, and found that many new houses and villas had been built, as also a very good and large hotel; the Hôtel de France, an English church, a fine casino or club, and convenient sea-baths. Indeed, the resources of the town have been improved in every respect, and now several hundred English winter there every year. Most of the patients and friends I have sent have been satisfied with their winter's experience.

The latitude of Biarritz is the same as that of Pau, 43°;

that is, seven degrees more south than Torquay. This situation necessarily implies a warmer winter climate, more sun heat. The winter temperature of Biarritz is, I believe, pretty nearly the same as that of Pau, with perhaps a slight difference in its favour owing to the vicinity of the ocean.

As we have seen, the proximity of the sea always renders the temperature of a locality milder and more equable. The existence also of an extensive tract of dry sand, such as constitutes the Landes, extending a hundred and fifty miles, from Bordeaux to Bayonne, implies paucity of rain, and the absence of that continued precipitation of moisture during the winter that characterizes the more northern sea-coast of France and England. We may deduce this fact from the arid dryness of the sandy plains of the Landes of France, whether it be that this part of France is still within the range of the scanty Mediterranean rainfall, or that the mountains of north-western Spain precipitate part of the moisture brought by the south-westerly Atlantic winds.

Biarritz has hitherto only been noticed by writers on climate as a favourite summer and autumn watering-place, but I believe, from the above facts, from the testimony of others, and from my own investigations, that it has also claims to be accepted among the eligible winter stations of the south. As stated above, there are social reasons, also, that make it worthy of notice.

Owing principally to the favour of the late Imperial family Biarritz has become one of the most frequented and most fashionable seaside watering-places in France; hence a great influx of sea-bathing visitors in summer and autumn. To provide for their wants, numerous hotels and houses have been built, and an active and extensive system of commissariat has been established.

Once the summer sea-bathing visitors are gone, the hotels and houses are nearly empty, and the supplies find no market. The result is, that in winter Biarritz is as cheap a place to live in as it is expensive in summer and autumn. This state of things will probably long continue, for the summer development is certain to greatly outstrip the winter requirements, even were it to become a winter

colony like Pau, Nice, and Mentone. To persons requiring a southern climate whose means are limited, and who are therefore obliged to consider every expense, this consideration may be one of primary importance.

It is impossible that a town situated on the boisterous Bay of Biscay can be equal in point of climate to the Riviera undercliff, or to the east coast of Spain, in cases of severe disease in which the best climate that can be found is required. But still there must be many cases in which the sunshine, and mild temperature of the south-western coast of France may be sufficient. Moreover, the question of expense is often, unfortunately, a paramount consideration.

Biarritz is picturesquely situated five miles south-west of Bayonne, at the bottom of the Bay of Biscay, a short distance only from the Spanish frontier. It has long been resorted to by the inhabitants of Bayonne and of the Pyrenean district, in summer, for its excellent sea-bathing. It was, however, all but unknown to fame until the Empress Eugenie brought it into notice by making it her marine autumnal residence. Notwithstanding imperial patronage, the position of Biarritz is so secluded, and the distance from the French capital is so great—523 miles—that both its natural and medical advantages and capabilities are as yet only partially known and appreciated.

The climate of Biarritz is modified by its geological as well as by its geographical position. From Bordeaux to Bayonne, a distance from north to south of some 150 miles, and penetrating inland to a considerable depth, extend the vast sandy plains to which the French give the name of Landes. This district, which has an area of 3700 square miles, is often called a desert, but in reality it is merely an immense moor, and is covered with pretty nearly the same vegetation as our own moorlands, heather, ferns, gorse, and pines. The climate, however, being very much warmer and drier than our own, the vegetation is much less luxuriant, more stunted and more thinly scattered. The sand lying on clay in many parts of its extent there are marshes or ponds.

Indeed, the Landes of France may be said to occupy a

medium position between the heather and fir-clad sandy moors of Surrey, for instance, and the arid shores of Eastern Spain or the deserts of Africa, where a greater degree of heat and dryness all but entirely destroys even the vegetable tribes that are peculiar to such soils. This sandy tract is of course remarkable for the warmth of its temperature, which in summer is intense. Although it ceases at the Adour, a river which passes through Bayonne, and which throws itself into the sea between that city and Biarritz, it exercises a considerable influence over the climate of the strip of tolerable land, some fifteen or twenty miles in depth, which extends from the Adour to the foot of the Pyrenees. Thus Biarritz, although out of the district of the Landes, participates to a certain extent in the summer heat and the winter mildness of that part of the Gascony of former days.

The heat of summer is tempered at Biarritz by a sea-breeze which constantly blows inland during the day, and by its situation on a different geological substratum—viz., sandstone rocks. The Biarritz lighthouse is built on the first sandstone projection which appears south of the Adour, the coast of the Landes being formed by low ridges of sand. The village of Biarritz is situated on two small bays, which occupy the centre of the Bay of Biscay, formed on the north-east by the low coast of France, and on the south by the base of the Pyrenees and by the province of Biscay in Spain, into which the Pyrenees extend, rising tier over tier.

As the coast at Biarritz attains a considerable elevation, and the two small bays are strewn with large rocks, honeycombed by the ceaseless action of the powerful Atlantic swell, the character of the scenery is highly picturesque. The coast with which I should feel the most inclined to compare it is that of Ilfracombe, in North Devon. It has not, it is true, the stern grandeur which the geological formation there imparts to that beautiful spot, but in some respects it is even more irregular and wild. The friable nature of the sandstone rocks offering less resistance to the action of the Atlantic, they are excavated and fretworked into every conceivable shape.

During my residence at Biarritz, the weather, until the end of September, was fine; no rain falling except during the night, on two or three occasions. The sky was clear, generally cloudless, the sea blue, and the sun powerful, so much so as to render a sunshade all but indispensable between nine A.M. and five P.M., when walking in the sun. The wind varied between S.W., S., and S.E. When in the S.W., which was mostly the case, there was always a heavy sea rolling in from the Atlantic or rather from the Bay of Biscay. When in the S.E., which only occurred for a few days, the sea was much calmer. On one occasion, for forty-eight hours the wind was due south. During this time the heat was very oppressive, although the thermometer only rose one or two degrees, from 74° or 75° to 76°. I was told that such was always the case in summer when the *Vent d'Espagne*, or south wind, reigned, and that it was feared like the scirocco on the Mediterranean coast, to which it was compared. The thermometer in a cool, shaded room varied from 70° at night to 72°, 74°, or 76° in the daytime, until the weather broke up on the 26th, when it descended to 70° early in the morning, and to 68° later in the day, at 4 P.M. The temperature of the sea-water I found generally to coincide with that of the morning atmosphere, in deep water at some little distance from the shore.

The beach, as is usually the case on such coasts, is a firm, smooth sand, peculiarly adapted for bathing. There are three distinct sites for the purpose: the Côte du Moulin, the Côte des Basques, and the Port Vieux. The two former are rather exposed situations, on the sides of the small bays, and at both there is generally a considerable swell. The beach shelves gently, and the bathing is excellent; but waves rolling in rapid succession have to be encountered, which to the weak and delicate is rather fatiguing, especially if the sea is rough.

The Port Vieux is a species of natural amphitheatre in the midst of the rocks, opening to the sea. In front of the open or stage part, at less than a quarter of a mile distant, there are several huge rocks, which form a natural breakwater. One of them, called the Grand Rocher, is so

large that the sea only breaks completely over it in very rough weather. Thanks to the protection thus afforded, at low tide the sea in the Port Vieux is all but calm, and at high tide only agitated, in ordinary weather. The Port Vieux is the favourite resort both of the bathing and non-bathing visitors at Biarritz.

Around the concavity of the amphitheatre, facing the sea, as the boxes of a theatre face the stage, are a number of small cabins, built on piles, about four feet from the ground. Those on one side are devoted to the ladies, and those on the other side to the gentlemen. The back entrances of the cabins abut on the cliffs, which rise abruptly to a considerable elevation. On the beach, between the cabins and the sea,—in the pit, as it were,—are placed chairs, which are occupied in the morning by nursery maids and children, and in the middle and latter part of the day by the more fashionable visitors, who congregate to chat in the continental way, and to look on the aquatic appearance and performance of their friends and acquaintances, and of the public generally.

Both ladies and gentlemen wear a "bathing costume." With the former it consists of loose black woollen drawers, which descend to the ankles, and of a black blouse or tunic, descending below the knees, and fastened at the waist by a leathern girdle. On leaving their cabins, they put on also broad-brimmed straw hats, and a wide waterproof cape which they keep on until they reach the water's edge, when it is taken off by the bathing attendant. This costume, like all picturesque costumes, makes the young and the pretty look younger and prettier, but certainly does not set off to the same degree the more matronly of the lady bathers. All, however, young and old, seem totally indifferent on the subject, and pass smilingly before their friends and the spectators, appearing to enjoy every stage of the performance. Most ladies have an attendant, male or female, and many are, or speedily become, very expert swimmers. They are to be seen daily swimming, with or without companions, at a considerable distance from the shore. The beginners use corks or gourds tied under their arms, but the more experienced discard all such aid.

The gentlemen's dress is a kind of sailor's costume, and as custom gives them more latitude with respect to colour, material, and make, great varieties are observed. The exquisites of the place seem to take a pride in showing themselves off thus prepared for their marine gymnastics. I have often seen them, cap in hand, feet and ankles naked, talking to their lady friends sitting around, previous to taking their first plunge. Once in the water, all the bathers, male and female, mingle together; the timid remaining near the beach, and the bold and learned in the art of swimming striking out into deep water. The utmost decorum, however, prevails; the husband assists his wife, the father his young daughters, but strangers keep at a respectful distance in the water, as they would on dry land.

At first, this aquatic mingling of the bathers strikes the English beholder as an infringement of the laws of propriety and decorum, but a more close scrutiny brings the conviction that such is really not the case,—indeed, that this mode of bathing is infinitely more decorous and decent than that which is pursued on our own shores. The bathers are, to all intents and purposes, dressed; and there is, in reality, no more impropriety in their witnessing each other's marine sports than there is in the members of a masquerade mingling in the streets during the Carnival at Rome or Naples. I may add that, once in the water, a light woollen or cotton dress is not felt, and in no way interferes with liberty of movements and with the pleasure of bathing. Indeed, when bathing has to be carried on in so public a place, a light costume of this description is a great addition to the bather's comfort.

The natives of southern countries remain much longer in the water than we do, and often make their bathing consist of various stages of going in and out, resting between-times. This they can do with impunity, owing to the temperature of the water. When both the air and the sea are 74° or 76° Fahr., as was the case during the greater part of my stay at Biarritz, bathing is an indescribable luxury, and the inducement to remain in for more than a plunge certainly is very great. I believe that there is no danger in the moderate prolongation of

the sea-bath, as long as no sensation of cold or chill is experienced.

The vegetation around Biarritz gives evidence of a southern climate, without, however, being as characteristically southern as that of Nice. Nice is pretty nearly in the same latitude, but is sheltered from the north by the Maritime Alps. At "exposed" Biarritz the principal trees are Planes, the principal product, Indian Corn. The Tamarix grows very luxuriantly, and becomes a tree, some twenty or thirty feet high; but there are no Orange trees, gigantic Aloes, Opuntias, Palms, or Caper plants, as at Nice and along the Riviera. Ferns are very abundant in the lanes, of which there are many in the neighbourhood. They are paths, or cart-tracks, sunk a few feet below the level of the adjoining fields, and their banks are covered with ferns, mostly of the same species as those found in England. Heather grows freely also in the sandy soil.

On the whole, Biarritz is a very enjoyable seaside residence, and presents some peculiarities and advantages which will probably render it useful to our countrymen, now it can be easily reached by the railroad from Paris to Bayonne, both as an autumn and winter resort. In summer the heat is, no doubt, greater than is agreeable to the natives of our isles, but in September and October the temperature is moderate, and suitable to the healthy. Those who cannot resort to our own coasts in July and August, and to whom a mild or warm temperature is essential, have thus the opportunity of still enjoying at Biarritz summer sea-bathing, at a time when with us both the sea-water and the external atmosphere are becoming chilly.

The village of Biarritz, like all French seaside villages and towns, is built away from the sea, behind the cliffs which form the bay. All French maritime populations endeavour to shelter their homes from sea winds, which they seem to look upon as enemies to be avoided as much as possible. It is a straggling village, composed of two streets parallel to the cliffs, and contains no Marine Parades, no Marine Crescents, but a heterogeneous collection of houses of all sizes and shapes, with booths in the

middle of the streets, which give it the aspect of a fair. This appearance is kept up by the stream of people, many in Basque costumes, who pour in all day by the omnibuses from Bayonne, most of them merely remaining a few hours; in other respects, Biarritz is a very quiet place.

The late imperial residence, "the Villa Eugénie," is a small, rather naked French château—a miniature of the palace of St. Cloud. It presents the form of a parallelogram, the base being turned towards the sea, and is situated on the beach, on a terrace, partly artificial. From the drawing-room windows the view is truly marine; nothing is seen but the wide ocean, and some large rocks in the offing, against and over which the surge is constantly breaking. At high tide the sea bathes the foot of the terrace, and in rough weather the waves break over it, and cover the front of the house with their spray; so much so, indeed, that considerable damage is occasionally done, and gratings have been placed at the bottom of the windows to take off the sea-water which dashes against them. One advantage the residents at Biarritz certainly possess over us of the Mediterranean, they have the rolling surges of the Atlantic, the daily rise and fall of the great Ocean swell, and the tempestuous waters of the Bay of Biscay to contemplate.

The Rev. Mr. Crow, the English clergyman in 1862, informed me that in the month of January of that year the average of his daily observations, made at 8 A.M. on a north wall, was about 45° Fahr. The highest temperature during that month at the above hour was 62°, the lowest 30°. In February there was some very cold weather. During seven days the highest temperature was 34° (at 8 A.M.), the lowest 24°. With the exception of that week, the weather was glorious, the thermometer after January varying from 48° to 62°.

These data are just what might be expected. Being situated in the south of France, on the margin of a vast tract of land in which, whatever the cause, less rain falls than further north, Biarritz must be mild, sunny, and comparatively dry in winter. Having, however, no mountain protection whatever to the north, it must also be

liable, like Pau, to spells of cold weather when the wind blows from that quarter. It has not behind it the screen of the Maritime Alps, nor has it the night radiation of the sun-warmed Riviera mountains.

Dr. Chapman, an English physician, who long practised at Biarritz, states that the average rainfall during three years for the seven winter months, from the beginning of October to the end of April, was 25·81 inches, on seventy-six days. The rain is often very heavy, indeed torrential, several inches falling in the twenty-four hours. On many of the rainy days, however, the fall is very slight.

The wind, when it blows from the south-west or north-west, is often furious. On my last visit on the 22nd of May, there was a gale from the south-west, and the wind was so strong that it was scarcely possible to stand against it. Indeed, in exposed situations, near the coast, scarcely any trees but the Tamarix and a few Conifers will grow, and they are stunted. The late Emperor's plantations on the hills behind his house have not thriven from this cause. In sheltered positions trees and flowers grow luxuriantly. I found Elms, Planes coming into leaf May 22nd, also Arbutus, Magnolia, Berberis. I found Camellias and Oleanders growing in the open ground. Roses, hybrid, tea, and Bengal, were opening into flower, as also Hydrangea, Delphinium, Silene, Stock, Peony, Verbena, Rhododendron, Geranium, Petunia. Beans were in flower, Peas in pods.

The exceptional periods of cold weather to which Biarritz is exposed in winter explain its vegetation. Severe night frosts with a temperature of 20°, once in half a century, would destroy all the southern vegetation of the Genoese Riviera—the Lemon, the Orange, the Palms, the Cacti, and the Lycopodia.

Although I do not think Biarritz altogether suited to consumptive invalids, who require a dry, bracing, mild winter climate, there are, however, many forms of delicacy and of actual disease, in which short spells of clear, cold, bracing weather, and the moisture of the Atlantic atmosphere, are not objectionable. Much colder weather has to be encountered in our English sanitaria Ventnor, Bournemouth, Torquay, also situated on the moist shores of the

Atlantic, than is met with at Biarritz during even an exceptional winter, and yet their value is unquestionable. Probably Biarritz would do as well, if not better, but I repeat a drier and milder climate than is to be found on the Atlantic shores is certainly indicated in most forms of pulmonary consumption whenever it can be attained.

Arcachon.

Having often heard Arcachon, also in the Bay of Biscay, lauded as a winter resort for consumptive invalids, I determined, in the spring of 1868, to visit it on leaving Mentone. A leisurely journey across the south of France brought me there by the 22nd of April, and I remained until the end of the month examining and analysing the locality.

On this journey I had an admirable opportunity of studying the difference between the climate and vegetation of the Mediterranean basin and that of the shores of the Atlantic. I took ten days to pass from Mentone to Arcachon, only travelling twenty or thirty miles a day. The botanical and horticultural evidence of a comparatively dry climate, of one in which vegetation depended on winter and spring rain, and in which the summer heat was intense, followed me to Toulon, Marseilles, Montpelier, Cette, indeed through Provence, until half way between Cette and Toulouse. Then the proximity, or rather the influence, of the Atlantic became apparent. The water-courses were more numerous and better filled, grass meadows appeared, Willows and Poplars were frequently seen, and the sky lost the dry blue tinge of the Mediterranean to assume the whitish hue of the Atlantic atmosphere.

Arcachon (lat. 44°) is now, like Biarritz, a fashionable watering-place, thirty miles south of Bordeaux, in the "Grandes Landes," on the margin of an immense salt-water lake, sixty-eight miles in circumference, which empties itself into, or communicates with, the Bay of Biscay by a narrow channel, only one mile wide. Formerly Arcachon was a mere fishing village, lost in the *dunes* or sand-hills of the coast. These sand hills, half a century ago, were entirely denuded of tree vegetation, as was the greater

part of the department of the Landes. To prevent the violent winds from the Atlantic carrying the moveable sands into the interior, the French Government, at about that period, had the sandhills on the shore, and the sandy plains in the interior, planted with the Pinus Maritima. These plantations have everywhere succeeded, and now the shores of the Arcachon lake, and those of the sea itself, are covered with fine Pine forests, that have effectually accomplished the object for which they were designed. They have rendered the loose sandhills immovable, and thus arrested their progress inland.

The presence of Pine forests, varied as we recede from the sea by deciduous trees, Heather, Gorse, Ferns, by wild plants and flowers, has changed, as by a magician's wand, the character of the scenery. Instead of a naked sunburnt melancholy coast, lined by soft moveable sandhills, we have one presenting all the charms of wild forest scenery. In the year 1854 some Paris capitalists, with M. Pereire at their head, saw the germ of a profitable speculation, bought up a large tract of land, and founded modern Arcachon. It is now a pretty sea-side town on the borders of the salt lake, with good hotels, picturesque villas, convenient and handsome club-house and baths—indeed, all the appurtenances of advanced civilization.

The summer town is built on the sandy shore of the great lake or sea, which affords excellent bathing. The lake itself, from its great extent and from its being land-locked on every side, offers every possible facility for safe boating, yachting, and fishing. A few hundred yards from the shore rise the Pine-covered sandhills, and here, in the midst of the forest, are the villas more especially built for winter habitations. A more lovely sea-side spot in spring and autumn, or even in summer, if not too hot, one more calculated to secure all the enjoyments of a sea-side residence—bathing, boating, fishing, driving, riding, and walking—it would be difficult to find. I do not believe, however, that it deserves the reputation it has acquired as a winter residence for the consumptive.

A minute analysis of all the physical elements of the question, and a careful survey of the vegetation, lead me to

assimilate Arcachon in most respects to Biarritz, situated in the same region, on the Bay of Biscay. There is the same moist Atlantic atmosphere, the same exposure to wind and rain with the prevalent south-westerly and north-westerly winds, the same liability to occasional severe cold in winter from want of mountain shelter when the wind is in the north. Arcachon has, however, in winter, the advantage over Biarritz of its Pine forests, as also that of being some little distance inland, on the shore of the great salt-water lake. The south-west and north-west winds are, consequently, less boisterous than at Biarritz, which is actually on the sea shore, facing the sea. The Pine forests, covering a considerable area, extending for miles in nearly every direction, also afford considerable shelter against wind for walks and drives. In this sense, therefore, Arcachon is a better winter residence than Biarritz. But Pine forests, although they may afford a certain amount of protection and shelter, do not prevent boisterous north-westerly or south-westerly winds being felt, as does a mountain range running east and west, nor do they modify the actual weather brought by such winds.

If a mild, dry, bracing atmosphere, such as exists in winter on the Genoese Riviera and on the east coast of Spain is generally indicated in pulmonary consumption, it is not certainly in such a climate as that of the coast of the Atlantic, in the Bay of Biscay, that we can expect to find it. I would refer, however, to what I have said respecting the health features of Biarritz, merely adding that, in my opinion, neither the one nor the other offer to the greater part of consumptive invalids the climate which their disease requires.

At the same time both Biarritz and Arcachon possess unquestionably, a more genial winter climate than any seaport in the British Isles. They are, also, immeasurably superior to any British or continental inland town in any form of disease requiring a rather mild and equable temperature, as a winter residence.

CHAPTER XX.

THERMOMETRICAL TABLES AND REMARKS—MENTONE—THE NILE—MALAGA—MADEIRA—ALGIERS—GENERAL TABLE—CLIMATE OF ENGLAND—NO ESCAPE FROM WINTER NORTH OF THE TROPICS.

TABLE I.

Dr. Henry Bennet's Media, Mentone, for 15 *Winters,* 1859–74.

November.	MIN.	MAX	D.	December.	MIN.	MAX	D.	January.	MIN.	MAX	D.
„ 1859	54·4	61·4		„ 1859	44·8	55·6		„ 1860	44·8	52·8	
„ 1860	49·5	60·9		„ 1860	44·3	59·2		„ 1861	45·1	52·4	
„ 1861	47·7	60·3		„ 1861	43·4	54·8		„ 1862	43·2	50·7	
„ 1862	50·2	61·2	6·1	„ 1862	42·6	54·	6·	„ 1863	43·2	52·4	5·5
„ 1863	50·5	63·	6·6	„ 1863	44·3	51·7	6·5	„ 1864	38·2	48·7	6·3
„ 1864	48·	60·8	6·1	„ 1864	44·2	56·2	6·1	„ 1865	43·	55·	7·
„ 1865	50·8	60·3	3·2	„ 1865	43·6	54·5	4·5	„ 1866	43·8	55·3	3·6
„ 1866	50·	62·3	6·6	„ 1866	45·7	55·7	5·	„ 1867	43·8	54·1	4·6
„ 1867	47·9	62·2	6·2	„ 1867	41·6	55·3	5·8	„ 1868	42·3	53·5	5·1
„ 1868	46·	56·5	5·	„ 1868	48·8	58·7	3·7	„ 1869	41·5	53·3	5·1
„ 1869	46·6	59·	4·4	„ 1869	43·3	54·7	4·6	„ 1870	40·7	53·2	4·6
„ 1870	48·5	59 4	3·3	„ 1870	42·	52·1	3·6	„ 1871	40·2	51·6	5·
„ 1871	48·	57·6	5·3	„ 1871	39·7	50·3	6·	„ 1872	44·5	55·3	3·5
„ 1872	51·	60·8	4·7	„ 1872	48·	56·7	4·5	„ 1873	44·7	54·5	4·
„ 1873	48·8	56·3	4·9	„ 1873	47·1	56·7	7·	„ 1874	43·4	52·9	6·2
Media.....	49·2	60·1	5·1	Media.....	44·2	55·1	5·4	Media.....	42·8	53·	5·5

February.	MIN.	MAX	D.	March.	MIN.	MAX	D.	April.	MIN.	MAX	D.
„ 1860	40·	55·9		„ 1860	44·9	59·8		„ 1860	51·2	67·5	
„ 1861	45·7	52·9		„ 1861	44·4	58·9		„ 1861	49·8	66·9	
„ 1862	41·9	55·8		„ 1862	46·7	61·9		„ 1862	51·2	68·5	
„ 1863	42·3	54·1	8·5	„ 1863	45·4	58 9	6·9	„ 1863	50·9	67·	5·6
„ 1864	41·9	53·6	6·	„ 1864	45·4	62·	5·3	„ 1864	51·8	66·	5·4
„ 1865	40·1	54·	8·3	„ 1865	40·5	57·3	8·4	„ 1865	55·1	66·	6·6
„ 1866	46·5	61·1	4·1	„ 1866	44·	60·6	4·1	„ 1866	49·	66·9	5·
„ 1867	45·4	56·9	4·5	„ 1867	47·2	62·4	4·	„ 1867	51·4	68·4	6·5
„ 1868	45·	56·7	3·7	„ 1868	45·2	59·	4·9	„ 1868	49·5	66·3	4·6
„ 1869	46·6	58·3	3·6	„ 1869	41·5	56·7	5·5	„ 1869	48·9	69·1	4·5
„ 1870	43·4	55·4	4·3	„ 1870	4·4	58·7	5·6	„ 1870	49·1	65·7	6·8
„ 1871	43·3	55·9	4·2	„ 1871	47·5	61·	5·1	„ 1871	51·3	67·4	4 2
„ 1872	46·1	57·	4·1	„ 1872	47·9	60·8	5·	„ 1872	51·8	68·5	5·2
„ 1873	41·3	53·8	3·7	„ 1873	48·5	61·2	4·9	„ 1873	49·8	60·	4·9
„ 1874	43·	54·6	6·5	„ 1874	46·	56·7	6·2	„ 1874	51·3	60·5	4·2
Media.....	43·5	55·7	5·1	Media.....	45·3	59·3	4·3	Media.....	50·8	66·3	5·2

Mean Min. for the Six Winter Months for fifteen years . . 45·9
Mean Max. „ „ „ . . . 58·2
Combined mean for the Six Winter Months for fifteen years 52·
Mean of Dryness for the Six Winter Months during Twelve Winters, as indicated by the difference between the wet and dry bulb thermometers, marked D in the Table . . 5·1

TABLE II.

M. de Brea's Monthly and Annual Media for Mentone for Ten Years, 1850 *to* 1860. *Dr. Henry Bennet's Media for the Six Winter Months, for Fifteen Years,* 1859 *to* 1874. *Combined Winter Media for* 25 *years.*

	M. de Brea.	Dr. Bennet.	Combined Media for 25 years.
	°	°	°
January	48·2	47·9	48·
February	48·5	49·6	49·
March	52·	52·3	52·
April	57·2	58·5	58·
May	63·	—	—
June	70·	—	—
July	75·	—	—
August	75·	—	—
September	69·	—	—
October	64·	—	—
November	54·	54·6	54·3
December	49·	49·6	49·3
Annual	60·8	Winter 52·	Winter 51·7

M. de Brea's Media were obtained by adding the observations made at 6 A.M., 2 P.M., and 10 P.M., and then dividing by three, those of the ten years by ten. The maximum was 89°·6, the 3rd August, 1859. The minimum 32°, the 22nd January, 1855. My own Media were obtained by adding the maxima and media of each month during the ten years of observation, and dividing each by ten.

It is remarkable how very similar the results obtained by M. de Brea for the ten years from 1850 to 1860, are to those obtained by myself from the analysis of temperatures between 1859 and 1874. This similitude is the more remarkable as different modes of arriving at media were resorted to. M. de Brea, as stated, took his observations at 6 A.M., 2 P.M., and 10 P.M., deducing the media herefrom. I only took the maximum and minimum, dividing the sum total to obtain the media. Such results show that the two methods are equally true—one series of observations all but exactly counterbalancing the other. The two series show also how very uniform the climate is,

when a sufficiently large number of years are thus compared. The two Tables extend over twenty-five years.

TABLE III.

Mean Maximum Temperature in shade on the Nile, and at Madeira, Malaga, and Mentone, in January and February, 1860.

	IN JANUARY.	IN FEBRUARY.
Nile	72 ...	75
Madeira	66 ...	67
Malaga	58 ...	58
Mentone	52·8 ...	55·9

Frost in Algeria in December, 1869.

The following extract from the *Gardeners' Chronicle* of February 5th, 1869, will show what influence solar north winds can exercise over the south shores of the Mediterranean:—

An extraordinary frost has been experienced in Algeria. It appears, from a letter addressed to Dr. Hooker by Colonel Playfair, the British Consul-General, that the last three days of the old year, 1869, were very severe all over the country, but that in the neighbourhood of Algiers a hard frost prevailed, and sheets of ice were formed in the garden of the British Consulate—"a thing," Colonel Playfair says, "not known since the French occupation of Algeria." The effects of this unusual visitation, in a country where many tropical plants flourish in the open air, has been to kill such introduced plants as Bamboo, Cherimoyers, Guavas, Bananas, as well as a good many other plants, which were growing in an unheated greenhouse, such as Marantas, Stephanotis, Allamandas, and Passifloras. Colonel Playfair says—"Truly this is a delightful climate to live in, but a most perplexing one for a horticulturist; the heat of summer and the cold of winter, want of rain, siroccos, locusts, &c., are evils that no care can entirely guard against. The Musa Ensete is very much injured, but the Jardin d'Essai lies so low that it is doubtful if it ever actually froze there. The garden of the British Consulate, on the other hand, is high and very cold."

TABLE IV.

Nile and Mentone Temperatures compared. 1860.

The Nile observations are from Dr. Dalrymple's work on "Egypt."

	Minimum.					Maximum.			
	January.		February.			January.		February.	
	Nile.	Ment.	Nile.	Ment.		Nile.	Ment.	Nile.	Ment.
1	38	46	44	41	1	67	53	73	56
2	39	48	43	43	2	65	57	74	56
3	42	50	47	37	3	65	57	83	50
4	45	52	49	38	4	73	58	85	50
5	44	52	44	36	5	76	60	80	50
6	39	51	42	38	6	75	57	85	54
7	40	47	50	40	7	77	53	67	56
8	39	43	48	40	8	75	51	66	56
9	43	43	50	37	9	82	49	68	56
10	45	43	40	42	10	70	52	64	57
11	44	48	38	43	11	69	53	75	56
12	41	48	43	41	12	75	52	77	55
13	43	43	44	38	13	76	50	80	53
14	43	43	43	39	14	79	51	81	55
15	44	46	42	38	15	66	54	84	57
16	43	43	50	39	16	70	51	86	57
17	51	42	50	42	17	77	53	88	55
18	49	45	55	39	18	73	53	90	55
19	44	45	40	39	19	67	53	66	57
20	45	47	40	38	20	73	50	70	55
21	45	45	50	37	21	73	51	74	54
22	45	45	45	42	22	76	53	77	57
23	51	44	50	40	23	75	48	74	55
24	50	40	40	40	24	75	50	79	57
25	50	43	40	42	25	78	49	80	58
26	51	40	49	42	26	82	50	74	57
27	48	40	48	42	27	75	49	65	55
28	46	42	40	43	28	71	51	65	61
29	45	41	49	44	29	76	51	66	62
30	51	41	—	—	30	75	48	—	—
31	42	42	—	—	31	82	52	—	—
Media	44·6	44·8	45·2	40·0	Media	72·8	52·8	75·7	55·9

TABLE V.—FOREIGN CLIMATES (Sir James Clark).

PLACES.	Mean Annual Temperature.	MEAN TEMPERATURE OF SEASONS.				MEAN TEMPERATURE OF MONTHS.											
		Winter.	Spring.	Summer	Autumn	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Cairo	72·17	58·52	73·58	85·10	71·48	58·10	56·12	64·58	77·90	78·26	83·66	85·82	85·82	79·16	72·32	62·96	61·34
Santa Cruz (Canaries), 40	70·94	64·65	68·87	76·68	74·17	63·84	64·29	67·17	67·32	72·12	73·89	77·27	78·89	77·43	74·66	70·43	65·82
*Ceylon (Hill District), 44	70·18	69·30	70 78	69·54	71·29	69·15	69·49	70·84	72·70	71·42	69·43	69·83	68·86	70·83	70·88	70·64	69·72
†Malta, 37	67·30	57·46	62·76	78·20	71·03	56·50	56·30	58·10	61·80	67·40	73·80	79·60	81·20	77·80	71·10	64·20	59·60
Corfu, 38	65·55	54·28	59·85	77·09	70·97	52·57	51·85	54·57	58·28	66·71	72·28	77·71	81·28	78·28	70·85	63·78	58·42
‡Madeira, 41	64·96	60·60	62·36	69·56	67·30	59·71	60·28	61·86	62·03	63·44	66·90	70·04	71·88	71·28	66·76	63·96	61·44
Palermo [added]	64·40	53·1	59·3	74·7	66·8												
Algiers [added]	64·	55·	66·	77·	60·												
*Port Jackson (N.S.W.), 45	62·89	54·62	63·45	70·93	64·03	61·67	71·61	69·64	64·05	59·68	54·91	53·86	55·31	59·34	63·51	67·73	69·20
Cadiz, 39	62·88	52·90	59·53	70·43	65·35	51·40	53·73	55·21	59·64	63·75	68·16	70·27	72·86	70·17	67·10	58·80	53·58
St. Michael's (Azores), 42	62·40	57·83	61·17	68·33	62·33	59·00	59·00	59·50	61 00	63·00	67·00	68·00	70·00	68·00	63·00	56·00	55·60
Naples, 30	61·40	48·50	58·50	70·83	64·50	46·50	48·50	52·00	57·00	66·50	71·00	75·00	76·50	72·50	65·00	54·50	50·50
Mentone [added]	60·80	49·5	60·	73·	55·6	48·2	48·5	52·	57·2	63·	70·	75·	75·	69·	64·	54·	49·
Rome, 28	60·70	48·90	57·65	72·16	63·96	47·65	49·45	52·05	56·40	64·50	69·17	73·30	74·02	69·50	63·60	58·80	49 62
Pisa, 31	60·60	46·03	57·20	75·15	62·80	44·00	48·11	51·52	56·30	63·75	70·59	77·50	77·50	73·50	62·62	52·30	47·00
Genoa, 32	60·37	44·57	58·60	75·03	62·94	41·65	47·47	51·07	60·30	64·45	73·50	75·10	76·50	73·20	64·70	51·05	45·60
Toulon, 23	59·90	43·30	53·70	74·30	59·00	40·00	44·00	48·00	55·00	68·00	70·00	74·00	79·00	64·00	62·00	51·00	46·00
Marseilles, 24	59·50	45·50	57·56	72·50	60·08	44·80	45·06	49·07	...	...	...	...	...	...	58·20	50·40	46·60
Nice, 33	59·48	47·82	56·23	72·26	61·63	45·85	49·00	51·45	57·00	63·00	69·00	73·59	74·30	69·35	61·85	53·70	48·60
Florence, 34	59·00	44·30	56·00	74·00	60·70	41·00	45·00	48·00	56·00	64·00	69·00	77·00	76·00	70·00	59·00	53·00	47·00
*Port Philip (N.S.W.), 46	58·98	50·07	58·40	67·50	59·97	67·62	68·94	65·73	58·61	55·59	50·93	49·23	50·06	54·51	58·19	62·51	65·94
*Auckland (N.Z.), 47	58·43	50·68	56·82	66·38	59·82	67·91	67·33	64·24	60·49	54·74	51·41	48·99	51·66	53·99	56·41	60·08	63·91
Avignon, 25	58·20	42·60	57·13	74·66	59·00	42·00	43·50	50·50	55·00	66·00	72·00	76·00	76·00	67·00	60·00	50·00	43·30
Montpelier, 26	57·60	44·20	53·33	71·30	61·30	42·00	45·00	47·00	53·00	60·00	67·00	72 00	75·00	71·00	61·00	52·00	46·00
Pau, 27	56·18	41·86	54·06	70·72	57·39	41·20	43·60	48·80	51·80	61·60	68·20	70·60	73·40	67·40	58·20	46·60	42·80
Sienna, 35	55·60	40·50	54·10	70·80	57·10	39·70	40·22	46·20	53·70	62·40	67·50	72·80	72·30	66·00	58·30	47·10	41·70
Baths of Lucca, 36	55·00	...	...	68·17	...	...	...	...	53·00	69·50	63·00	70·00	71·50	66·00	...	...	...
Paris, 22	51·50	38·43	50·40	64·47	52·30	35·60	40·50	43·50	49·60	58·10	62·50	65·70	5·20	60·40	52·40	44·20	39·20

* Common Thermometer. Doubtful. ‡ Register Thermometer.

TABLE VI.

TO ILLUSTRATE THE CLIMATE OF ENGLAND.

Table showing the adopted Mean Temperature of every day in the year, as determined from all the Thermometrical Observations taken at the Royal Observatory, Greenwich, in the years from 1814 *to* 1863, *forty-nine years.*

Days of the Month.	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	°	°	°	°	°	°	°	°	°	°	°	°
1	37·3	37·8	40·2	44·6	49·8	57·0	60·9	62·4	59·0	53·9	46·4	42·1
2	37·0	37·7	40·2	44·8	50·3	57·3	61·1	62·4	58·7	53·8	46·3	42·2
3	36·7	37·8	40·2	45·0	50·8	57·4	61·3	62·4	58·4	53·7	46·1	42·3
4	36·4	38·0	40·1	45·2	51·2	57·3	61·5	62·3	58·2	53·5	45·9	42·2
5	36·2	38·3	40·1	45·4	51·5	57·2	61·7	62·2	58·0	53·3	45·7	42·2
6	36·0	38·6	40·1	45·4	51·7	57·0	61·8	62·1	57·9	52·9	45·5	42·1
7	35·8	38·8	40·2	45·4	51·7	57·0	61·9	62·0	57·8	52·5	45·3	42·0
8	35·7	38·9	40·3	45·4	51·7	57·3	61·7	62·0	57·8	52·1	45·0	41·7
9	35·8	38·9	40·4	45·3	51·5	57·7	61·7	62·1	57·7	51·8	44·7	41·3
10	35·9	38·8	40·6	45·2	51·3	58·0	61·8	62·1	57·7	51·6	44·4	41·0
11	36·0	38·6	40·9	45·1	51·2	58·3	61·8	62·1	57·6	51·4	44·1	40·7
12	36·1	38·4	41·2	45·0	51·2	58·6	62·0	62·0	57·5	51·2	43·8	40·6
13	36·2	38·3	41·4	44·9	51·4	58·8	62·3	61·9	57·3	50·9	43·5	40·5
14	36·3	38·2	41·5	45·0	51·7	59·0	62·5	61·7	57·2	50·6	43·2	40·4
15	36·4	38·1	41·7	45·3	52·0	59·0	62·5	61·5	57·1	50·3	42·9	40·2
16	36·5	38·1	41·9	45·5	52·3	59·0	62·4	61·3	56·9	50·0	42·6	40·0
17	36·6	38·2	42·0	45·7	52·6	59·0	62·2	61·1	56·7	49·8	42·3	39·8
18	36·7	38·3	42·1	46·0	52·9	59·1	61·9	61·0	56·5	49·6	42·0	39·6
19	36·9	38·5	42·2	46·4	53·3	59·2	61·6	60·9	56·2	49·3	41·8	39·4
20	37·0	38·7	42·2	46·7	53·5	59·5	61·4	60·8	56·0	49·1	41·6	39·1
21	37·2	38·8	42·3	47·0	53·8	59·9	61·5	60·7	55·8	48·9	41·4	38·8
22	37·4	39·0	42·2	47·2	54·1	60·3	61·5	60·7	55·5	48·7	41·2	38·5
23	37·7	39·2	42·2	47·4	54·3	60·7	61·6	60·6	55·2	48·5	41·1	38·1
24	37·9	39·4	42·2	47·6	54·6	61·2	61·7	60·5	55·0	48·2	41.0	37·8
25	38·1	39·6	42·3	47·7	54·9	61·6	61·8	60·5	54·8	47·9	40·9	37·6
26	38·3	39·8	42·5	47·9	55·2	61·7	61·9	60·3	54·6	47·6	41·1	37·4
27	38·4	39·9	42·9	48·1	55·4	61·6	62·0	60·1	54·4	47·3	41·1	37·3
28	38·4	40·1	43·2	48·4	55·7	61·5	62·2	59·9	54·2	47·0	41·3	37·2
29	38·3	...	43·6	48·8	56·0	61·4	62·3	59·7	54·1	46·8	41·6	37·3
30	38·1	...	44·0	49·3	56·3	61·1	62·4	59·4	54·0	46·6	41·9	37·4
31	37·9	...	44·4	...	56·6	...	62·4	59·2	...	46·5	...	37·5
Means	36·9	38·7	41·7	46·2	52·9	59·1	61·8	61·2	56·6	50·2	43·2	39·8
Mentone	48·0	49 0	52·0	58 0	63·0	70·0	75·0	75·0	69·0	64·0	54·6	49·5

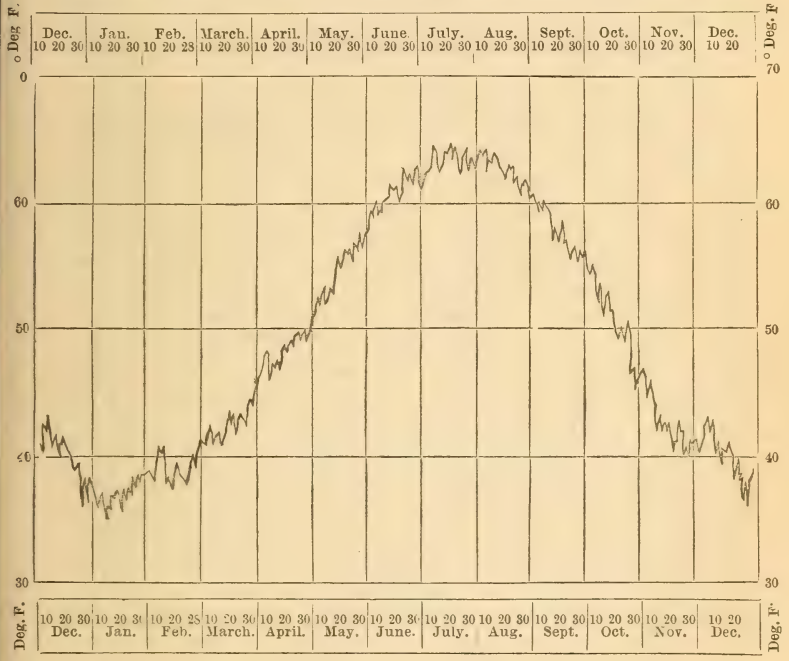
The mean temperature for the entire year:—

England . . . . . 49·03

Mentone . . . . . 60·8

TABLE VII.

Diagram showing the Mean Temperature of the Air for every day in the year, from Observations made, from January 1, 1814, *to December* 31, 1863, *at the Observatory, Greenwich, forty-nine years.*



These tables are exceedingly interesting, affording an immense amount of information respecting the English climate. Thus they illustrate its mildness and equability, both in winter and in summer. In winter the mean is never below 35°, or three degrees above freezing, and only reach that level on four days, the 7th, 8th, 9th, and 10th of January. In summer it is never above 62°, and only reach that level between the 12th of July and the 12th of August. A glance also suffices to dispel the common illusions about spring. The 1st of May medium is 49° 8′, which corresponds to that of the 17th of October. No wonder May-day should be cold and bleak; the May-day of our ancestors was twelve days later, owing to the change in the calendar.

REMARKS ON THE THERMOMETRICAL TABLES.

THE RETURN HOME.

The analysis of the preceding Tables will substantiate the details I have given in the first part of this work respecting the climate and vegetation of the Mediterranean and of the Genoese Riviera, as illustrated by the Mentone amphitheatre.

My own Table gives the result of thermometrical observations taken during the six winter months, from November to April, inclusive, for fifteen years, from 1859 to 1874. These observations were taken with care by the means of self-registering thermometers made by Negretti for scientific observation. I preferred taking maxima and minima to making observations at 6, 2, and 10 P.M., as did M. de Brea, whose results for the ten preceding years I give in Table II. As already stated, it is remarkable how very nearly we arrive at the same figures by these different modes of observation in the two successive periods. The Table speaks for itself, but I would add a few remarks in elucidation of the results obtained.

The first winter that I spent at Mentone, 1859–60, the lowest night temperature was 35° on the 17th December. The thermometer never descended lower than 37° on any other occasion. In the second winter, 1860–61, the lowest point attained was 32° on two nights in December, the 22nd and 23rd. On no other night did the thermometer mark a lower temperature than 37°, as in the previous winter.

In the winter of 1864–5, the first night that the thermometer descended below 40° Fahr., was on the 24th of December. During that month, and the four following ones, the thermometer was below 40° on thirty-two nights only, viz.:—

December	4
January	6
February	11
March	10
April	1
	32

Thus from the first night that the thermometer descended below 40°, December 24th, to the last, April 1st, or during 122 days, it was 32 times below 40°. The two lowest temperatures recorded were February 22nd, 33° Fahr.; and March 25th, also 33° Fahr. My thermometers never reached the freezing point 32°, although it sometimes froze on these colder nights in exposed situations. Generally, however, the thermometer on the cold nights was between 36° and 40°, and then it did not freeze anywhere.

During the four cold months of this winter, 1864-5, December, January, February, and March, the wind was principally from the northerly quarter. It blew from that direction 84 days out of the 121—leaving 37 for southerly winds.

December	15	North winds.
January	25	
February	24	
March	20	
	84	

These days were all but invariably days of brilliant sunshine, with a blue sky. They are the fine-weather days of the winter climate of this part of Europe. On the days when the south winds blew, there was nearly always cloud, and often rain.

Thus, during the 121 days of the four winter months, there were 29 days of rain, and 92 days of fine fair weather. Of these rainy days, 20 occurred with south winds, and 9 with north winds:—

		RAINY DAYS.	
December	10	South	8
		North	2
January	5	South	3
		North	2
February	2	South	2
March	12	South	7
		North	5
	29		29

In all the winters that I have passed at Mentone a great fall in temperature has coincided with polar storms and with extreme and unusual cold in the north of Europe. In 1859-60 the frost was very severe and prolonged throughout the north, when the temperature was low with us, and in 1860-61 the thermometer descended 40° below the freezing point in England, at the time we had cold weather. The cold was more severe this winter than had been known for thirty years throughout Europe. During the winter of 1864-65 there were also spells of exceedingly cold weather all over Europe. Rivers were frozen over, and snow lay many feet deep on the ground, reaching the most southern parts of France. On one occasion, at the end of December, the railroad between Narbonne and Toulouse was buried in the snow, and many people lost their lives. In all these instances polar storms prevailed.

Indeed I have always remarked at Mentone that exceptionally cold and stormy weather has coincided with polar winds, and with violent storms and intense frosts in the north and centre of Western Europe. The Mediterranean basin is clearly not out of the influence of extreme meteorological disturbances occurring in the northern regions of Europe. At those times we have generally a north-westerly or north-easterly wind, the sun is obscured by clouds, the higher mountains may be covered with snow down to the level of the olive-groves, and cold rain from the north may fall on shore. These are our worst days, but fortunately such weather never lasts more than a day or two. When on these occasions we receive newspapers and letters from home a few days later, we invariably hear of fearfully cold weather on land, and of storms at sea. Generally when rain and snow fall with a north wind the latter is from the north-west.

It will be perceived that although the night minimum seldom descends below 40° during December, January, February, and March, it also seldom ascends above 50°, and is generally between 40° and 50°. The day maximum in the shade varies from 50° to 58°, although occasionally below 50°. This latter temperature always coincides with a low night temperature and an obscured sky, nearly

always with snow on the mountains and rain on the shore, and with north-west or north-east winds.

A careful scrutiny of the tables of Mentone temperature brings out a peculiar and important feature every year reproduced—viz., the regularity with which the temperature descends in the autumn, and ascends in the spring. Often for several nights and days together, the night minimum and the day maximum reach exactly the same figures; they fall and rise gradually and uniformly. We must except the spells of bad weather just described, coinciding with extreme cold all over Europe, the result of north or polar hurricanes. The range of temperature, the daily difference between the minimum and maximum, is not great, seldom reaching more than 10°, an important point for invalids. Such a state of things constitutes an equable winter climate, although not so equable as that of the islands and of the south shores of the Mediterranean, where the difference is usually only from two to six degrees.

The climate of England is very different. Few persons are aware how very uncertain it is, and how often, even in the summer months, the thermometer goes down nearly to the freezing point. The following is a reliable statement from the *Gardeners' Chronicle*, of Sept. 3rd, 1864.

"From October 1st, 1863, to June 6th, 1864, at Worksop, Nottinghamshire, there were 164 frosty nights, and on 46 more the register was under 40°. Thus for eight months and six days the register was only above 40° on 36 nights. The frosty nights were :—

"October	12	Frosty nights.
November	15	
December	24	
January	28	
February	26	
March	28	
April	16	
May	9	
June	6	
	164	

"In August cold nights again set in, and on the 19th,

the thermometer fell to 27°; on the 20th to 35°; on the 21st to 31°; on the 22nd to 26°; on the 23rd to 33°."

Thus is brought out the fact that the British Isles are really situated in a northern region, in the same latitude as Labrador on the North American continent, the seaports of which are closed by ice eight months of the year. It is the warm Gulf stream that gives us our exceptionally mild climate for the latitude. It is worthy of remark that in April and May at Mentone the wind is often in a southern quarter, and yet there is no rain. The wind is, however, only a gentle "aura," or zephyr, and the mountains are already so warmed by the sun that they are warmer than the wind. Under such conditions the sea remains calm, and there is no precipitation of rain.

It is the minimum and maximum temperature of any given region that principally regulates vegetation, and also to a great extent climate. I believe, consequently, that by the study of vegetation only can we form a true idea of the real climate of any locality. If a thermometer is fairly placed according to the rules adopted by scientific meteorologists, and the instruments used are good, we may accept data given by this mode of observation. Thermometrical observations, however, are liable to error in all climates, unless extreme precaution be taken to avoid undue solar influences, reflected heat, and exceptionally protected situations. The same remark applies to the registration of wind.

Media, drawn from the addition and division of maxima and minima observations and examined alone, are very deceptive. Thus the medium temperature of 80° as the day maximum, and of 40° as the night minimum is 60°, which would, taken alone, give a very false idea of the real climate of a locality. Where such media are observed the winter medium of 60° implies a mild climate, whereas it is made up of intense heat in the day, and of chilly cold at night, with a daily range of 30° or 40° as on the Upper Nile.

It is impossible also to judge what a climate really is when "seasons" are only spoken of, and season media are given. Thus, October, November, and December are called the autumn season, and a high medium temperature is reached for the autumn quarter by its including the month

of October, which is a warm month in most regions of the Mediterranean. The same remark may be made with reference to the winter quarter, which includes March, also a comparatively warm month, in the daytime at least, in these regions. The real winter on the shores of the Mediterranean is limited to December, January, and February.

Many observations in health localities likewise are made with a mental bias which invalidates them. Thus, had I made my observations at ten o'clock, A.M., seventy feet from the ground, and within the influence of reflected heat from the sun, I might have obtained a day temperature of nearly 60° throughout the winter.

Dr. Dalrymple, in his interesting work on the Climate of Egypt,* gives the minima and maxima for the months of January and February accurately observed in his Nile boat. The night minimum was a fraction *lower* than at Mentone during the month of January, 1860 (from latitude 27° 13′ to 22° 10′). During February the minimum mean was 5° higher, as will be seen by the comparative Table No. IV. (from latitude 25° 55′ to 31° 46′), showing the more rapid advance of spring. The day maximum, on the contrary, was much *higher* during both months, being all but constantly between 70° and 80°, and sometimes above 80°. The mean of January was as high as 72°·8, that of February 75°·7. Such a range must be very trying, especially to chest cases—from 40° or 45° at night to 70° or 80° or even 90° in the day. At Mentone the mean maximum of January in the same year was 52°·2; that of February 55°·9, the usual medium for the month.

Although the climate is dry at Mentone, whenever in the autumn or in the spring the thermometer is at or above 70° most of the chest invalids feel oppressed, although less so than in England. They appear to get on best with a dry, sunshiny, cool atmosphere, such as generally prevails, with the thermometer at 54° in the shade north, and from 60° to 64° in the shade south.

Moreover, a low night temperature, which has clearly to

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* "Meteorological and Medical Observations on the Climate of Egypt." 1861.

be encountered on the Upper Nile (latitude 22°), and in the Great Desert of Sahara, as well as on the north Mediterranean coast, is better met by an invalid in a comfortable, well-built house on land, than in an Arab tent, or in a boat on a river, even if that river be the Nile.

When the Nile journey is contemplated, we must also take into consideration the discomforts of the long journey, the proverbial unhealthiness of Alexandria and Cairo, where some time has to be spent both going and returning, and the actual fatigue of constant change and motion.

At Malaga and Madeira the day maximum is also higher than at Mentone, according to Dr. Edwin Lee,* Dr. Francis,† and Mr. White,‡ as seen in Table III. The night minimum of Malaga is not given by these authors. Mr. White says, that at Madeira the lowest point attained in 1841 was, in January, 51°; in February, 53°. The mean minimum was 55° for both months—much higher, as we have seen, than either the Nile or Mentone media.

Table III. gives the mean maximum heat of the Nile, Madeira, Malaga, and Mentone in January and February.

In Table II. I have given M. de Brea's media for Mentone temperature for each month, founded on ten years' observations, as compared with my own. His observations prove that the summer temperature at Mentone is moderated by the proximity of the sea, and of the mountains, as well as that of the winter. The summer maximum in ten years was 89°; in Paris, London, and Berlin the thermometer in summer often rises above 90°.

The fact, that in northern climates the summer-day heat may be very intense, all but tropical, whilst the winter cold may be very severe, quite polar, and that for several weeks together, shows the fallacy of trusting to media for an idea of climate. Thus the annual media of Marseilles (59° 5′)

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* "Spain and its Climates, with a Special Account of Malaga." By Dr. Edwin Lee. Pp. 64. 1855.

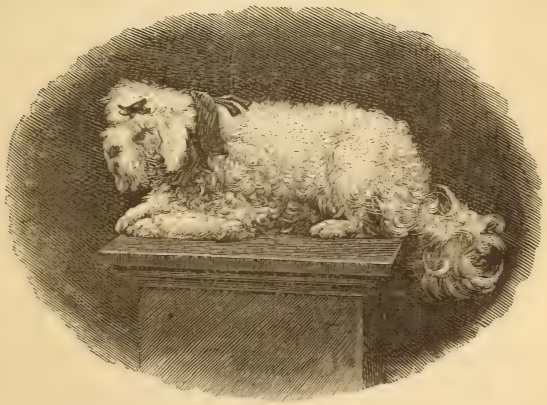
† "Change of Climate, with an Account of the most eligible Places of residence for invalids in Spain and Portugal." By Dr. D. S. T. Francis. 1853.

‡ "Madeira: its Climate and Scenery." By Messrs. White and Johnson. 1865.

and that of Mentone (60° 8′) are all but the same; yet the climates are totally different. At Mentone, we have a more southern vegetation than on the north shores of Africa; at Marseilles the vegetation is that of the north of France.

These thermometrical tables illustrate a very important fact, generally ignored. There is no escaping winter north of the tropics (lat. 25°)—or even for some degrees south of lat. 25°. Dr. Dalrymple found in Upper Egypt, on the Nile, that the thermometer descended to 42° on the 31st of January in latitude 22° 10′. Cold nights, cold rain, snow on but slightly elevated mountain tops, are met with in winter, up to within twenty degrees of the equator, that is unless immunity from cold is obtained by exceptional and special protection from the north, as at Mentone (lat. 43° 45′), or by insular position, as at Madeira (lat. 31°).

To entirely escape winter influences, therefore, if it be desirable, the invalid or traveller must visit the tropics, or pass the equator, and seek summer in the southern hemisphere, at the Antipodes, the Cape of Good Hope, South America, or Australia.



RUFFIE.

CHAPTER XXI.

THE JOURNEY FROM ENGLAND TO THE MEDITERRANEAN—THE RETURN.

Marseilles and Nice, Genoa and the Genoese Riviera are the points of the Mediterranean, to which most invalids and travellers first direct their steps. My remarks will, therefore, be confined to the journey to and from these regions.

Firstly, I would advise no invalid to endeavour to reach the Mediterranean and especially the Riviera, before the last ten days of October. September and the early part of October are still warm, indeed sometimes oppressively hot and moist. Moreover, the probability is, that in October will occur the two or three weeks of continued rain which principally constitute the rainy season. The heat and moisture are not only unpleasant but unwholesome, and apt both to weaken the constitution and to give rise to liver and intestinal congestion and irritation, and to severe diarrhœa, sometimes bordering on dysentery.

I myself never try to reach Mentone before the last week in October, out of regard for my own personal welfare; I would rather remain anywhere on the road than do so. The very conditions of shelter and protection that make the Riviera so desirable a residence when once cold weather has commenced in the south of Europe, render it close and oppressive in the autumn.

It is the same in England with Torquay and the Undercliff of the Isle of Wight. The worst time of the year for these and similarly situated localities is the month of August and the early part of September, and that from the very circumstance of their being peculiarly sheltered and protected in winter.

Every year, when I reach Mentone, I find these facts exemplified. Within a few hours of my arrival I am called

in to patients and friends suffering from severe diarrhœa, and the longer they have been in the place the more severe is the attack and the more difficult it is to subdue. If from fortuitous circumstances the south is reached too early, it would be better to spend a week or two at Avignon, Toulon, or Nice, which are more open, and at this time of the year, cooler and pleasanter.

The month of September is generally fine, pleasant, and safe in England, even for confirmed invalids, if they take care to avoid the rather chilly evening and morning air. By the end of the first week in October, the equinoctial gales are over, and it is time to depart, as the English climate rapidly deteriorates both at night and day. A cloudy sky and dense morning fogs may then become the rule.

The invalid should go down to Folkestone or Dover in the morning or afternoon, and sleep there; the next day, if the weather is tolerably fine, he can cross. If the sea is very rough, it is absolute folly to do so; the depth of the water in this part of the British Channel is not great, and the sea soon rises and soon falls. It may thus be rough in the morning and smooth in the afternoon, or *vice versâ*. Moreover, the hotel accommodation is very good;—the Lord Warden at Dover, and the Pavilion at Folkestone, are both comfortable hotels.

The last ten days of September and the first week of October, the sea, in the straits between the French and English coasts, is nearly always rough. Then generally comes a lull, a period of calm, as I learnt many years ago. When actively engaged in London practice, I always took a holiday in September, and generally spent it on the Continent—returning for the opening of the London medical session, on the 1st of October. I usually had frightful passages, until I remembered that I was crossing just at the middle of the autumnal equinox. I then remained a week longer abroad, and became as fortunate in the sea passage as I had previously been the reverse.

If the passage is effected without much suffering and in the morning, even an invalid may continue the journey to Paris the same day; by express train it takes about four

hours. In Paris there are innumerable good hotels; the Louvre, the Grand Hotel, the Bedford, the Lille and Albion, may be mentioned as first-class hotels.

If France has been reached early in October, it may be well to remain in the north for a week or ten days before proceeding south, to avoid heat and rain. The more open parts of Paris constitute a healthy autumnal residence if the weather is fine, and there is always a charm about it, even for invalids.

Fontainebleau, which is thirty miles south of Paris, on the railroad to Lyons, is better still. The town is small and clean, the hotels airy and comfortable, and the forest scenery around extensive and very beautiful. The "Chateau," also, is full of interesting historical recollections. Indeed, I do not know of a more healthy or more pleasing resting-place for an invalid, either on his way from the north to the south in autumn, or on his return from the south in spring. Fontainebleau has certainly, in both seasons, a ten days' advantage over Middlesex or Surrey; the autumnal fine weather continues ten days longer, and the spring begins ten days sooner.

Towards the 15th or 20th of October, according to the season, the journey should be continued to Lyons. The morning express from Paris to Lyons, Marseilles, and Nice, leaves Paris at 11 A.M., reaching Montereau at 12.35, where passengers from Fontainebleau are taken up. This train reaches Dijon at 5.29, and Lyons Perrache at 10.15 P.M.; Marseilles, 6.33 A.M. the next morning, Nice at 2.31 P.M.; Monaco, 3.23, and Mentone, 3.45, on that day.

If the journey to Dijon is felt to be sufficient, good accommodation can be obtained there for the night, but the hours for the express trains the next day are awkward. As thirty-one minutes are given for a very comfortable table-d'hôte dinner, most travellers prefer to go on and to sleep at Lyons, where there is a first-rate hotel, the Grand Hôtel de Lyon. This hotel is one of the large and comfortable hotels that have recently been built in Paris and in other large towns of France. It has, however, the great disadvantage of being at least two miles from the railroad, in

the centre of the town. To those who can put up with less luxurious accommodation I would recommend the Hôtel de l'Univers, which is within a stone's throw of the station; it is clean and kept by very civil people.

The "day" express from Lyons to Marseilles, the 8 P.M. from Paris, leaves at rather too early an hour in the morning for invalids, 7.30. I therefore advise them to make the night one of complete rest, to breakfast quietly, and to take the 10.30 A.M. omnibus train to Valence, which is reached at 2.21, or to Avignon, 7.2. The weather is generally fine, the scenery of the Rhone valley is interesting, and to me the slow progress of the train, and frequent stoppages is a relief after the whirl of the day before; it gives time for reading and for conversation with the French gentry who get in and out at the local stations.

The inn at Valence (Hôtel de la Poste) is second-rate, but still will do for a night. Valence is a pleasing little place, with a tree-planted promenade, looking over the broad and rapid Rhone. In one of the streets is shown a very unpretending house, in which Napoleon Bonaparte lived for above a year, when lieutenant in a regiment quartered in the town. I always go to see it; the idea is strange of the great Emperor lounging about this little provincial town as lieutenant in a marching regiment. What were his thoughts, his views of the future, the limits, then, of his ambition?

The Marseilles express starts from Valence in the morning at 9.56 A.M., a much better hour, and, refreshed by two good nights' sleep, the traveller is better prepared for another long journey. It reaches Marseilles at 3.45.

The arrival at Avignon by the slow train is rather too late (7.2). Montelimar (3.53) might be chosen, but the inn is even inferior to that at Valence. It is clean and I found the fare and beds good, but it is thoroughly French, such as are found in second-rate French towns not frequented by foreigners, but by French commercial travellers.

The day Marseilles express leaves Montelimar at 10.52 A.M., Avignon at 1; reaches Marseilles at 3.45 P.M.; and Toulon, at 6.18. Toulon is a good point at which to remain a few days, either to recruit or to wait. It is so far south, and so

sheltered, that at the end of October it is still summer. There are the dockyards and port to visit, and the convict establishment, a terribly interesting sight. Hyères, also, is within a drive, and deserves a visit as the first Mediterranean winter station met with.

Most travellers who take the day express through from Lyons, Valence, Montelimar, or Avignon, sleep at Marseilles, where there are several splendid hotels—such as the Grand Hôtel de Marseilles, the Grand Hôtel du Louvre, and the Grand Hôtel de Noailles. Marseilles is quite a different town to what it was twenty years ago; the late French Emperor transformed it, as he transformed Paris. Formerly it was a dirty, close, unhealthy city, to be avoided rather than courted. Now, handsome streets and boulevards have been opened out in every direction, light and air have been let in, and a magnificent port, La Jolliette, has been constructed. Marseilles has thus become a first-class and elegant city, where a few days may be passed safely and agreeably. The quick night express which leaves Paris at 7.15 P.M. passes Avignon at 9.2 A.M., reaches Marseilles at 11.40, where it stops 25 minutes for luncheon, reaches Nice at 8.14, and Mentone at 9.32; so that travellers who have slept at Avignon can go through to Nice or Mentone in a day. At Nice there are many good hotels; among the best may be named the Hôtel des Anglais, on the public garden.

I have cautioned invalids against going south too soon, and I must now caution them against going too late. It is desirable to get to the south side of the Maritime Alps, beyond Toulon, before the end of October—if possible by the end of the third week. Otherwise there is a risk of having to encounter cold weather; even in the south of France cold rain, with north winds, may fall by the end of that month. Those who delay their journey until the beginning of November often suffer from this cause throughout their entire progress.

I am persuaded that for ordinary invalids, the quiet, cautious mode of travelling above sketched out is the best. If good nights are secured, and a quiet breakfast is taken at the usual hour, travelling during the day is very easily

borne, and the invalid arrives at the journey's end without feeling wearied. There is no lost ground caused by broken nights and extra fatigue to make up. There are, however, cases in which it may be desirable to travel more rapidly. With young children, who can lie down, and who sleep nearly as well in a train as in their beds, it is better to push on—to go direct from Paris to Nice, or Monaco, by the 7.15 P.M. fast train. Again, with invalids who feel every change from the train as a dreadful fatigue and trial, it may also be as well to pack up comfortably in an invalid carriage, and not to loiter on the way.

On the French lines of railway they have carriages which they call *coupé lits*. They are carriages without divisions, so that an invalid can lie at full length throughout the journey. There are three seats in these carriages, and the charge is for four; they are to be had by application, the day before, at all the principal stations. If the party is large, and there is an invalid in the number, the best plan is to divide, and for the invalid to travel separately with some experienced person.

When the journey is made by stages, the French plan is to leave the luggage at the station, *au depôt*, merely taking a carpet-bag to the hotel with necessaries. The French railroad company will not allow passengers the convenience of through tickets, with power to stop on the way, for what motive I cannot imagine. Through tickets can be taken from London to Marseilles, but then the traveller is only allowed to break the journey at Paris and Lyons. This facility has been given, however, to Mr. Cook, the holder of the tourist tickets. They can now give coupons in London or in Paris which enable passengers to send on their luggage from Paris to the end of the journey, and to travel without it, stopping all but anywhere.

The Fare from London to Paris, by Folkestone tidal steamer, is: first class, 2*l.* 16*s.*; second class, 2*l.* 2*s.* From Paris to Marseilles by express, first class only, 106 frs. 30 c. (4*l.* 5*s.*); to Mentone, 30 frs. 65 c. (1*l.* 4*s.* 6*d.*). The steamer from Marseilles to Nice is 32 frs. (1*l.* 5*s.* 8*d.*).

If the traveller going to the Riviera sleeps at Nice, he can either pursue his journey to Monaco or Mentone by

rail, or be driven over the Turbia mountain in a carriage. In the latter case he should start at twelve, so as to get in before four; the drive, as I have stated, is one of the loveliest in Europe. The cost of a carriage is thirty-five or forty francs, with five francs to the driver.

Mentone may be easily reached by Lyons, Macon, the Mont Cenis tunnel, Turin, Genoa, and the Riviera; but I do not recommend this route to invalids, as it is attended with more changes and fatigue than that by Marseilles. There is no really quick train like the 7.15 P.M. from Paris.

Those, however, who are merely wintering in the south for pleasure, or who merely wish to recruit from overwork and over-fatigue, may easily make a very enjoyable progress on their way to their winter quarters. They can start early in September, pass through Switzerland, and over the Alps by the pass the least known to them, the Splugen, St. Gothard, the Simplon, or Mont Cenis; and once out of the line of the railroads, take a *vetturino* carriage, avoid the rail, and make a pleasure tour. For instance, from Milan or Padua to Bologna, from Bologna to Florence and Pisa, from Pisa along the eastern Riviera to Genoa, and along the western to Mentone, Nice, or Cannes.

These are very delightful excursions, which I made in years gone by, and which I never think of without pleasure. The best plan is to engage a comfortable *vetturino* carriage, charioteered by some good-natured man, and drawn by three or four good strong horses. A carriage may be chartered for a given journey at a certain price, or for an indefinite period at so much the day, in any part of Switzerland or Italy.

This style of travelling—*vetturino*—used to be very common in the south of Europe, and is the most comfortable, pleasant, and hygienic of any for tourists not much pressed for time, or very particular about expense. Once the traveller has secured a roomy and easy carriage, with an intelligent, civil driver, both of which are to be had if sought for,—and once the agreement fixing the payment, at so much the distance or so much a day, has been duly signed and delivered, he may bid adieu to care. He becomes master of his movements, he can eat when he likes, walk when he likes, and sleep when he likes. Thus the

greatest drawbacks to continued travelling are removed from his path.

It should be remembered, that in *vetturino* travelling, the driver for the time being is your servant, and must do your bidding, and everything should be arranged in conformity with previous habits and the laws of hygiene, provided the written agreement be not infringed. Thus the journey becomes a pleasure, and a source of health instead of a trial of strength, as often occurs.

The plan which I generally adopted was to rise at six or seven, to take a cup of tea or coffee, and to start at seven or eight, the carriage being closed at the top as a protection against the sun, open at the sides, and prepared for the day's campaign by a comfortable arrangement of umbrellas, books, maps, and provisions. The latter usually consisted of a basket of bread, meat, biscuits, wine, and fruit, provided before starting, with Liebig's extract of meat, a little of which makes bad soup good, and a bottle of Dunn's extract of coffee which transforms any kind of milk, cow's, sheep's, goat's, or camel's, into good coffee. At nine or ten we stopped for breakfast, which can be obtained anywhere, if the traveller is contented with milk, bread, butter, eggs, and honey. There is an *Extrait de Café Moka* to be found in all French towns. Then the journey is resumed, and at twelve or one the principal stoppage of the day takes place for the dinner of the driver and of his horses.

If the traveller wishes to make a solid lunch he can do so, if he is satisfied with his own frugal supplies, the midday rest becomes a period of liberty, during which he can survey all around, analyse the habits and customs of the peasantry, study the architecture of their houses, farms, out-buildings, their agricultural operations, and the local botany. Finally, if agreeable, and weather permits, he can take a good hygienic walk in advance of three, four, or more miles. When tired he has only to sit down by the roadside in some picturesque nook until the carriage overtakes him. If the driver, as is usually the case, rests for a couple of hours, and four or five miles have been got over, it is nearly three before the carriage is again resumed. To me these midday strolls in advance were the pleasantest

part of the day's journey. After that, progress is steadily made until six, when the final stoppage takes place. Then comes dinner, a walk, or a chat with your companions or some new acquaintance, a cup of tea, and an early retirement for the night.

The day's programme can be varied according to the wishes of the traveller, to health requirements, and time. For instance, the first start may only be made after an early breakfast, and the final stoppage may be made earlier or later. As already stated the traveller must remember that the driver is in his pay, and bound to submit to any reasonable demand consistent with his agreement, although most *vetturini* will, if allowed, try to make their will and convenience the rule.

When the south of Europe is reached in the autumn, two great plagues have to be encountered—fleas and mosquitoes. For the former there is an admirable remedy in France and Italy with which I should advise travellers to provide themselves from a chemist—viz., "*La Poudre Insecticide*," our Persian Powder. A dessert-spoonful, more or less, according to the number of one's foes, sprinkled over the sheets, if the powder is fresh and good, has an admirable effect. In the morning they are found lying on their backs, either dead or faintly struggling, and utterly powerless; a very pleasing sight.

This powder is composed of the flowers of a Pyrethrum, extensively cultivated in Persia, Armenia, and the Caucasus. Several species of the Pyrethrum are used, but that of the Caucasus is the best; it was introduced into France about the year 1850 by M. Willemot. Since then he has procured the seed from the Caucasus, and has raised the plant, which proves quite hardy, and able to stand our winters. The species thus raised appearing to differ from that previously known, it has been named Pyrethrum Willemoti. The flowers, which resemble those of the ox-eye daisy, are cut off, powdered in a mortar, and preserved in well-corked bottles. It is said to be efficacious against all kinds of insects offensive to man, but to him it is perfectly innocuous.

Mosquitoes are more difficult to deal with, and much

more venomous antagonists. The higher we are the less numerous we find them, so we are recompensed, in one sense, for climbing up to a third or fourth storey. It is well to remember, also, that light attracts them, and not to open the window at dark whilst there is a light in the room; not until the latter has been extinguished.

Where there are net mosquito-curtains, as in India, it is easy to keep mosquitoes at bay, but they are seldom met with; the curtains are mostly open, or so heavy that if closed the inmate is half-suffocated. Although mosquitoes are numerous on the Riviera, the bed-curtains are as defective there as elsewhere. It is quite worth while therefore for those who suffer from them, and especially for invalids, to have at once, on arriving, bed-curtains made of net, closed all round. They admit of the free passage of air, and as they are lifted up bodily at the side, they can be thoroughly closed again, and these vile pests can be kept at bay; then their war-song on the outside is heard with pleasure instead of dread. The mosquito belongs to the same family as our gnat (*Culices*). The sting is most venomous to newcomers from the north. Once a thorough inoculation has taken place the bites ceasing to be so venomous, travellers suffer much less, or not at all, the second year.

Mosquitoes continue venomous in the south as long as the nights are warm; the advent of cold nights in November seems gradually to take away their power of inflicting injury. I have observed the same thing in England; for insects exactly like the southern mosquitoes abound in wooded districts in the south of England. In cool summers, however numerous, they seldom or never bite, but in hot summers their venom is elaborated, and they become nearly as formidable as those of the Mediterranean shores. The warmer the autumn is in the south the longer they remain in the ascendant; nothing but really cold nights chills their ardour. Those who keep their bedroom warm may have them as companions all winter, for they both feed at their host's expense, and are protected from cold.

Whether the invalid is leaving the north of Europe for the south in autumn, or the south of Europe for the north in spring, I firmly believe that it is essential for his welfare,

that the journey should not be too hurried, too precipitate. The difference of climate, between the north and south of Europe, is so great, that there is absolute danger in too sudden a transition.

I see this fact exemplified every year, both in autumn and spring. Railways have all but annihilated space, and the facilities they afford to rapid travelling are so great that a traveller may leave the London Bridge station at 7.40 on Monday morning, by mail train for Paris, and be at Nice or Mentone for supper the following day, Tuesday. Unfortunately, invalids are not unfrequently tempted to adopt this "cannon-ball style of travelling," as I call it, and often pay a severe penalty for so doing. The transition from the cool, moist climate of England or Paris in autumn, to the dry, sunny, stimulating atmosphere of the north shores of the Mediterranean, is too sudden, and developes various forms of liver, intestinal, skin, and head disease. The same results follow in spring, on the return journey. Every spring the Paris physicians tell me that they have to attend many patients, who, after spending the winter in the south, break down with bronchitis, pleurisy, rheumatism, after a rapid return journey to Paris early in the spring, and from the same cause, a too sudden change of climate.

A leisurely progress, both in descending south and ascending north, is the most prudent course to follow, both for invalids and for the sound. On the one hand they avoid needless fatigue, on the other they avoid a too sudden transition from one decided climate to another. The journey should be considered and made a short pleasure tour.

THE RETURN FROM THE MEDITERRANEAN.

When the return homewards has been decided upon, there is an all but universal wish on the part of the invalids to join sound friends, and to make a tour on the way. Many years' experience, however, has convinced me that it is impossible effectually to pursue health and pleasure at the same time. I am persuaded that no greater mistake can be made than to endeavour to combine sightseeing either with wintering abroad for health, or with the journey

to and from the south. In other words, real invalids should never accompany strong, healthy, sightseeing friends or relatives in their pleasure tours; they themselves should be the main consideration. They should, as already stated, neither start too early nor too late, about the second week in October, go direct to their destination by easy stages, reaching about the last week of October, and return home quietly when the fine weather is thoroughly established, towards the middle or end of May. And yet nearly all fall into the contrary error, especially on the return journey. As soon as March comes, the wildest travelling plans are formed—often by the greatest sufferers. The object is the restless Anglo-Saxon desire to see the world on the way home; the result is to bring the invalid into every kind of danger, and not unfrequently to undo all the good gained in the winter.

A very pleasant lounging homeward journey may be made through the south of France, with little or no risk after the middle of May, when the mistral has abated, but such a journey by no means satisfies the majority of our invalid well-read countrymen and countrywomen. Naturally enough it is Italy they sigh for, Italy they want to see: Genoa, Florence, Rome, Milan, Venice, the glorious Italian lakes, and the grand Swiss mountains, with their glaciers, their torrents, and their pine forests; hence the danger. The unwholesome towns I have described, the snow-covered passes of the Alps, are pregnant with danger, and should be avoided by the diseased, until they have regained health, and can once more defy the elements.

A delightful and perfectly safe journey may, however, be made in April, by those who are sufficiently strong and well to endure the fatigue of travelling, along both Rivieras to Genoa and Pisa; from Leghorn direct by sea to Marseilles; or through Corsica, by Bastia and Ajaccio, to Marseilles, or by Genoa, Milan, and the Mont Cenis Tunnel.

Corsica alone may be easily visited by way of Nice or Genoa, and Sicily is also accessible from Marseilles or from Genoa. For the details of the journeys to Corsica and Sicily I must refer to the special chapters on those countries

which I have visited in this invalid manner, with very great profit and delight.

The easiest and safest return pleasure journey in spring, however, is the one along the Riviera. Even a confirmed invalid may prudently, towards the middle of April or the beginning of May, travel slowly by carriage to Genoa; returning the same way, or taking the Mount Cenis Tunnel. I have travelled many times by this route in spring, and have always greatly enjoyed its exquisite scenery, and that without the least fatigue.

On a calm day in spring the sea journey from Nice to Genoa only takes a few hours, and is very enjoyable, the steamer skirting the base of magnificent mountains all the way. As there are now boats every other day each way, it is always feasible to wait for fine weather.

In concluding, I would repeat the advice already given in various parts of this work. Real invalids, seriously ill, should make no experiments, and should avoid all health residences where they cannot enjoy every possible comfort which the state of their health may render necessary; they are not the people who ought to break new ground. This advice may be extended to those who, although enjoying health, leave England for the first time, and are not accustomed to foreign ways and manners, and who are consequently very wedded to English habits.

Both these classes of winter emigrants are best in those parts of the Continent which the English have long frequented, and which have thus been moulded to English tastes and requirements. There may be some little advantage, in an economical point of view, in going to hitherto untrodden regions, but it must be remembered that economy on the Continent is invariably connected with the absence of the comforts and decencies of life to which we, as a nation, are accustomed. The more comfortable, the cleaner, the more English, in a word, a place becomes, the more expensive it also becomes. Moreover, the further we go from home the greater the fatigue and expense of the journey, and the more difficult it is to get back, once arrived at the destination.

I have reserved for the end of this book an extract from

the treatise of my late esteemed and regretted friend, Sir James Clark, on "The Sanative Influence of Climate." Although it first appeared many years ago it still retains its position as a valuable work on climate, and any advice it contains deserves to be weighed and pondered by all whom it may concern :—

"Too much is generally expected from the simple change of climate. It often happens that from the moment the invalid has decided upon making such a change, his hopes are fixed solely upon it; while other circumstances, not less essential to his recovery, are considered of secondary importance, and sometimes totally neglected. This is an error not always confined to the patient; his medical adviser frequently participates in it: nor is this difficult to be accounted for. The cases hitherto sent abroad have been, for the most part, consumptive, or other diseases of long standing, in which the ordinary resources of our art have failed; therefore, when change of climate has at last been determined upon, the physician, as well as the patient, is disposed to look upon it as the sole remedy.

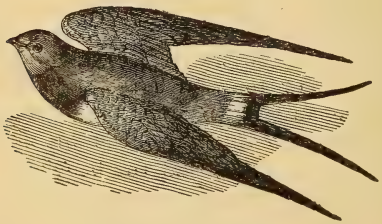
"But as I have witnessed on a pretty extensive scale the injury arising from this over-confidence in the unaided effects of climate, and the consequent neglect of other matters of no less consequence, I particularly request the attention of invalids to the following remarks.

"In the first place, I would strongly advise every person who goes abroad for the recovery of his health, whatever may be his disease or to what climate soever he may go, to consider the change as placing him merely in a more favourable situation for the removal of his disease; in fact, to bear constantly in mind, that the beneficial influence of travelling, of sailing, and of climate, requires to be aided by such a dietetic regimen and general mode of living, and by such remedial measures, as would have been requisite in his case had he remained in his own country. All the circumstances requiring attention from the invalid at home should be equally attended to abroad. If in some things greater latitude may be permitted, others will demand even a more rigid attention. It is, in truth, only by a due regard to all these circumstances, that the powers of the

constitution can be enabled to throw off, or even materially mitigate, in the best climate, a disease of long standing.

"It may appear strange that I should think it requisite to insist so strongly on the necessity of attention to these directions; but I have witnessed the injurious effects of a neglect of them too often, not to deem such remarks called for in this place. It was, indeed, matter of surprise to me, during my residence abroad, to observe the manner in which many invalids seemed to lose sight of the object for which they left their own country,—the recovery of their health. This appeared to arise chiefly from too much being expected from climate.

"The more common and more injurious deviations from that system of living which an invalid ought to adopt, consist in errors of diet; exposure to cold, over-fatigue, and excitement in what is called 'sight-seeing;' frequenting crowded and over-heated rooms; keeping late hours, &c. Many cases fell under my observation, in which climate promised the greatest advantage, but where its beneficial influence was counteracted by the injurious operation of these causes."



HOMEWARD BOUND.

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